Concrete Futures: Technologies of Urban Crisis in Colonial and Postcolonial Morocco

by

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DEDICATION

To my partner, Kimberly.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ABBREVIATIONS

Archival Abbreviations

CADN: Centre des archives diplomatiques (Nantes)
AM: Archives du Maroc (Rabat)
AAXXS: Archives d'architecture du XXe siècle (Paris)
BMHPV: Bibliothèque du Ministère de l'habitat et de la politique de la ville (Rabat)
CND: Centre national de documentation (Rabat)
BISR: Bibliothèque de l'Institut scientifique (Rabat)
SHD: Service historique de la Défense (Vincennes)

Institutional Abbreviations

AISI: American Iron and Steel Institute
CIFM: Compagnie immobilière franco-marocaine/Compagnie immobilière et foncière marocaine
CCM: Société des chaux, ciments et matériaux de construction au Maroc
CERF: Centre d'expérimentation, des recherches et de formation
OCH: Office chérifien de l'habitat
UMT: Union marocain du travail
HCRA: Haut-Commissariat à la reconstruction d'Agadir
GAMMA: Groupe d'architectes modernes marocains
UNFP: Union national des forces populaires
CNDR: Commission nationale du développement régional
LPEE: Laboratoire public d'essais et d'études
SCS: Service central des statistiques

ABSTRACT

Concrete Futures presents a history of colonial construction technologies and their postcolonial afterlives in Morocco. During the French Protectorate (1912-1956), cities such as Casablanca underwent a series of profound transformations. On the one hand, famine, unrest, epidemics, scarcity, rural migration, industrialization, an influx of European settlers, the reorganization of the land tenure system, and a host of other factors prompted experts, colonial officials, and local observers to articulate the problems facing urban Morocco in terms of an emerging "crisis." On the other, new technologies of housing construction, designed to address particular understandings of this "crisis," remade urban environments across the Protectorate. These technologies—from types of reinforced concrete construction to protocols for demolition and new strategies of housing finance—not only changed the way Moroccan cities were built, but also rearranged relations of authority between different communities of experts, officials, workers, and residents. During the final years of the Protectorate, the colonial administration deployed these *crisis technologies* in response to a range of perceived threats—from epidemics to anti-colonial revolt—emanating from Casablanca's urban slums. Decolonization in Morocco provided opportunities for urban experts to work *crisis technologies* into the modernizing programs of the postcolonial state. Officials adapted cinder-block constructions and microfinancial methods to the imperatives of disaster response in the wake of a catastrophic earthquake in the southern city of Agadir in 1960. In late 1960s and early 1970s, postcolonial

architects and administrators blended these technologies with new international definitions of the "environment" in the search for a sustainable, culturally appropriate architecture.

Crisis technologies, however, did not always perform in the ways that engineers, planners, and architects intended. Moroccan elites, workers, and artisans also participated in colonial modernization projects. At times, their participation disrupted the harmonious visions of planners and troubled the grand projects of engineers. At others, Moroccan forms of skill and labor were inscribed within *crisis technologies* and made to serve the aims of colonial governance. This dissertation argues that *crisis technologies* embedded colonial conceptions of crisis—with all of their contradictions—into the material form of Moroccan cities and the institutional structures inherited after independence in 1956. By considering how officials, experts, workers, and residents strategically shifted between different approaches to materiality in their efforts to remake the built world, this project uncovers the forms of political contestation and technological labor at the heart of colonial modernization schemes. Following colonial construction technologies and their postcolonial deployments, this account links together core concerns in urban environmental history, Science and Technology Studies, histories of architecture and urban planning, and studies of development and modernization. This dissertation also traces the long legacies of modernist failures in Morocco—failures to produce the well-ordered, multi-racial landscape that colonial planners imagined. These failures continue to resonate today. Contemporary forms of urban renewal draw on Protectorate-era strategies and arguments to displace residents, and present-day popular protests foreground demands for access to housing and infrastructure.

INTRODUCTION

> *To be modern is to build with modern materials…. it is a way of expressing material and economic as well as intellectual success. "I build with bricks and concrete slabs." And when the weather becomes too hot, he is going to go to his grandfather's house.*
>
> *—Abdelilah Laslami, August 14, 2017.*

What makes a building Moroccan? Contemporary scholars and experts might, with a few caveats, answer this question in much the same way as the architects, planners, and colonial officials of the French Protectorate (1912-1956), by looking to the *mudun* (old cities) of Fez and Marrakesh, the earthen *qusūr* (fortified villages) of the Draa Valley, or perhaps even the *qaryan* or *bidonvilles* (slums) of Rabat and Casablanca. It is less probable that they would consider the single-story, 8x8m cinder-block dwellings of the rebuilt Carrières centrales (Hay Mohammadi) in the 1950s or the concrete satellite city of Tamesna—constructed to rehouse former slum dwellers displaced by the most recent round of urban renewal in the kingdom. Still less likely that they would turn to the late capitalist dreamworlds of La Marina Morocco in Sala or the future financial district of Casa-Anfa. Yet, all of these structures are bound together by more than their geographic location. They are Moroccan because the technologies used to build them are *Moroccan.*

Today cities like Rabat, Tangier, and Casablanca are awash with global real estate capital

and spectacular urban megaprojects. They are also being transformed by state-led, internationally funded slum clearance programs that have pushed precarious residents further and further to the urban periphery. Planners and state officials in Morocco have positioned these two arms of urban renewal as responses to different forms of "crisis." "Crisis" here refers not only to the financial crisis of 2008, but also to more deeply rooted forms of urban marginalization that supposedly led to the 2003 Casablanca bombings and have played a role in provoking popular mobilization against the state in the form of the February 20th Movement and more recently the Hirak al-Rif. Concerns over climate change and sustainability as well as efforts to preserve and protect Morocco's architectural heritage have similarly been enfolded within this language of crisis.[1] Projects like the Cities Without Slums initiative—established in 2004 with funding from the World Bank and the Agence française de développement—address urban inequalities through the "eradication" of "highly precarious structures, shacks made from sheet metal and other salvaged materials."[2] The program then facilitates former residents' access to relatively low-interest loans for the purchase of apartments in new developments like Tamesna. In spite of their resonance with neoliberal spatial projects across the globe, these programs too, and the notions of "crisis" they put forward, are also distinctly *Moroccan.*

[1] For discussions of "heritage" discourse and debates about architectural preservation in the contemporary Maghrib see Justin McGuinness, "Political Context and Professional Ideologies: French Urban Conservation Planning Transferred to the Médina of Tunis," *The Journal of North African Studies* 2, no. 2 (September 1997): 34–56; Karim Rouissi, "Housing for the Greatest Number: Casablanca's Underappreciated Public Housing Developments," *The Journal of North African Studies* (November 2019): 1–26, https://doi.org/10.1080/13629387.2019.1692411; Diana Wylie, "The Work of Historic Preservation: Saving Oran's Fort Santa Cruz, and More: An Interview with Abdeslem Abdelhak, Bel Horizon Member and Guide," *The Journal of North African Studies* (November 2019): 1–13, https://doi.org/10.1080/13629387.2019.1692409; Diana Wylie, "Defying the Bulldozers: The Practice of Historic Preservation," *The Journal of North African Studies* (November 2019) 1–3, https://doi.org/10.1080/13629387.2019.1692402; Susan Slyomovics, "Is Patrimoine 'Good to Think With'?," *The Journal of North African Studies* (August 2019): 1–8, https://doi.org/10.1080/13629387.2019.1644887; Susan Slyomovics, "Dismantling a World: France's Monumental Military Heritage in Sidi-Bel-Abbès, Algeria," *The Journal of North African Studies* (August 2019): 1–25, https://doi.org/10.1080/13629387.2019.1644901.

[2] Agence française de développement, "Maroc : Programme d'action pour la résorption de l'habitat insalubre et des bidonvilles," adf.fr, January 2011, http://www.afd.fr/home/projets_afd/villes/projets-cld/lutte-contre-exclusion/maroc-habitat-insalubre.

Moreover, contemporary technologies of housing construction and present-day approaches to crisis are not only Moroccan, they are also rooted in the *colonial* past. Their origins lie in the French Protectorate—a colonial venture that lasted from 1912 to 1956 and provoked dramatic transformations of state and society in Morocco. During this period, Casablanca emerged as the country's largest city and became a model for urban experiments across the French empire. Casablanca also became the flashpoint of various "crises" that plagued Moroccan cities under the Protectorate—crises of housing, labor, unemployment, public health, and anticolonial unrest.

Crisis Arguments

This dissertation centers around colonial deployments and definitions of Morocco's urban crisis, a crisis that at its height in the late 1940s and early 1950s included housing shortages, unemployment, famine, epidemics, and urban revolt. The term "crisis" implied the need for rapid interventions to resolve critical urban problems. And yet, Morocco's urban crisis was not confined to a single set of issues, or even to a single decade. The term crisis was used flexibly and consistently in state records from WWI to the 1970s. After WWII, growing urban unrest, continuous housing shortages, and reduced colonial budgets inspired Protectorate engineers, planners, and financiers to adopt a novel set of strategies for managing crisis, a crisis that they treated as a permanent fact of urban life in Morocco.

The strategies that experts and officials adopted in the postwar period—what I refer to as *crisis technologies*—included materials like cinder blocks, forms of worksite organization like small-scale housing cooperatives, protocols for demolition and indemnification, and financial mechanisms such as state-backed, low-interest mortgages. Colonial officials developed these crisis technologies in the context of continued scarcity and anti-colonial revolt. They aimed to

create not only new types of pacified urban subjects but also a new kind of securitized urban environment. Crisis technologies connect a nexus of past and present-day urban problems—rural migration, densification, corruption, and toxic landscapes—to the long afterlives of colonial strategies for managing land, labor, and environments.

I argue that taken as a whole, crisis technologies of construction, demolition, and financialization remade relations between states and subjects, bodies and environments, labor and capital in Morocco. This project is a history of colonial technologies for managing crisis and the urban environments, the forms of authority and vulnerability that they left behind after Morocco's independence in 1956. This includes the ways that postcolonial experts adapted crisis technologies to the imperatives of disaster response in the wake of decolonization after a catastrophic earthquake struck the southern city of Agadir in 1960. It also involves tracing how postcolonial officials combined crisis logics with new international definitions of the "environment" in late 1960s and early 1970s. In Morocco today, crisis technologies, though often inserted into supposedly novel urban initiatives like the Cities without Slums program, continue to form the material and conceptual backdrop for everyday life—structuring possibilities for construction, destruction, and inhabitation.

Throughout the period in question, from the beginning of the Protectorate in 1912 to the mid-1970s, I consider "crisis" primarily as an actor category—a concept connected to particular professional communities and conjoined with certain forms of technopolitical practice.[3] This is not to discount the epidemics, overcrowding, controversies, and overt violence that plagued

[3] I use the term "technopolitical" in this dissertation in the sense proposed by Gabrielle Hecht to describe the "strategic practice of designing or using technology to constitute, embody, or enact political goals." Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, Mass.: MIT Press, 2009), 56-57.

Moroccan cities such as Casablanca from the first decades of the Protectorate onward.[4] The question, however, is how a range of seemingly related, but highly complex and multi-causal issues—from the scarcity of cement to Morocco's rural exodus—came to be grouped together under the heading of "crisis"? "Crisis," moreover, did not simply exist in the rhetorics of colonial officials. It was, in the language of historians of technology, *stabilized* through the practical activity of expert communities and *embedded* within the material form of Moroccan cities.[5]

Crisis left textual traces—an archive that I have worked to reassemble from administrative reports, technical journals, oral histories, legal codes, and literary sources read along and against the archival grain. Crisis also has material afterlives. The technologies that are the main focus of this dissertation operated by inscribing arguments about whose authority, whose vulnerability, whose knowledge and labor mattered into reinforced concrete foundations and cinderblock walls, lead pipes and public lighting, construction codes and mortgages,

[4] The sociologist, Abderrahmane Rachik, has shown in stark detail how the major urban interventions in Casablanca's history were formulated in response to moments of collective violence, epidemics, and generalized uncertainty. Rachik refers to the development of an "urbansime de l'urgence," an "emergency urbanism" composed of formal structures, concepts, and practices targeted at the management of Morocco's urban crises. While Rachik usefully highlights how new policies and spatial forms coalesced as reactions to various emergencies, he tends to focus on the cyclical return of the notion of "emergency" at particular moments such as 1913-1914, 1937-1938, 1952-1955, and 1981-1983. I emphasize instead the ways in which crisis, as opposed to emergency, was defined by a fundamental and ongoing temporal uncertainty. The language of crisis echoes throughout the colonial (and postcolonial) archive, cropping up at unexpected moments and in no way restricted to the periods of emergency that Rachik analyzes. By design, crisis had no definitive end point in Morocco. This is because Morocco's urban crisis was above all a crisis of authority and of agency—a concept aimed at determining and restricting whose knowledge, skill, and labor had the capacity to reshape the urban environment. Abderrahmane Rachik, *Casablanca: L'urbanisme de l'urgence* (Casablanca: Imprimerie El Jadida, 2002), 186.

[5] The question of how certain practices, technologies, concepts, etc. are rendered durable or are re-opened for debate has been a central question for Actor Network Theory (ANT) in particular. For only a few concise examples see John Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," in The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology, ed. Trevor Pinch (Cambridge, Mass.: MIT Press, 2012), 105–27; Bruno Latour, "Technology Is Society Made Durable," in *A Sociology of Monsters: Essays on Power, Technology, and Domination*, ed. John Law (London: Routledge, 1991), 103–31; For other definitions of stabilization that relate more specifically to technical artifacts see Wiebe E. Bijker, *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change* (Cambridge, Mass.: MIT Press, 1995); Others such as Thomas Gieryn have challenged Latour's notion that objects "move along a gradient of stabilization" arguing instead for the forms of ongoing "boundary work" necessary for expert communities to lay claim to epistemic territory. Thomas F Gieryn, *Cultural Boundaries of Science: Credibility on the Line* (Chicago: University of Chicago Press, 1999), 20.

institutions and environments.[6]

To suggest that crisis was constructed, fabricated, or invented might give the mistaken impression that it somehow resided exclusively within the frameworks for speech and action held by colonial officials. In contrast, scholars in a variety of fields—Science and Technology Studies (STS) in particular—have suggested that such concepts be considered in their *materiality* (a notion to which I will return in the following sections). Broadly this line of argument asserts that an object or idea that might previously have been discussed in terms of social construction is in fact literally constructed—built into infrastructures, environments, codified sets of practices, etc.[7] This dissertation was composed in the aftermath of this shift from a social constructivist framework to what has been referred to as the material (or sometimes the ontological) turn. This project is indebted to the theories and methods that have brought about this renewed interest in the material dimensions of knowledge production. While I would be loath to treat "crisis" as

[6] The notion of "inscription" here, drawn from Madeleine Akrich, refers to the act of building particular "scripts" (visions or narratives about use, reception, or impact) into technical artifacts. This process is carried out not only by designers but also by other sets actors who engage in the process of making technology work in the world. In contrast to Akrich's account of this process, I do not find it useful to separate these actors into "designers" and "users" of technology, but instead consider the various shades between these two poles—the working and reworking of technologies by a host of engineers, laborers, officials, and residents. Madeleine Akrich, "The De—Scription of Technical Objects," in *Shaping Technology/Building Society*, ed. Wiebe E Bijker and John Law (Cambridge, Mass.: MIT Press, 1992), 205–24.

[7] My approach to "crisis" bears an analytic resemblance to the ways historians and science studies scholars have recently approached a category such as *race*. That is to say, as assertions about the "social construction" of race have become intellectually and politically less useful (if what social construction implies is a kind of ephemeral fabrication), one interpretative thrust has become to look at how race is *materially* constructed. This is the case, for instance, in studies that consider how race is made bodily through racializing practices of biomedical health care, how race is materially built into cities through formal segregation and red lining, or how the same practices construct race as a feature of real estate markets or environmental exposures. For only a few examples that signal this shift see Kyla Schuller, *The Biopolitics of Feeling: Race, Sex, and Science in the Nineteenth Century* (Durham: Duke University Press Books, 2017); Elizabeth Roberts, "Assisted Existence: An Ethnography of Being in Ecuador," *Journal of the Royal Anthropological Institute* 19 (2013): 562–80; Sally Markowitz, "Pelvic Politics: Sexual Dimorphism and Racial Difference," *Signs* 26, no. 2 (2001): 389–414; Lundy Braun, "Spirometry, Measurement, and Race in the Nineteenth Century," *Journal of the History of Medicine and Allied Sciences* 60, no. 2 (2005): 135–69. On environmental racializations see Dorceta E. Taylor, *Toxic Communities: Environmental Racism, Industrial Pollution, and Residential Mobility* (New York: New York University Press, 2014); Linda Lorraine Nash, *Inescapable Ecologies a History of Environment, Disease, and Knowledge* (Berkeley: University of California Press, 2006); Nancy Langston, *Toxic Bodies: Hormone Disruptors and the Legacy of DES* (New Haven, Conn.: Yale University Press, 2010).

merely conceptual (i.e. immaterial), however, the research process led me to consider not only the materiality of discourse but also discourses of materiality. In other words, debates about what matter is, what it does, and who decides how it behaves are inseparable from the ways a concept like crisis is built into urban environments, real estate markets, and individual bodies. Against the division between discursive construction and material making, I oppose the concept of *technological labor*. Technological labor encompasses not only the manual manipulation of matter but also the use of "literary technologies" for defining what matter is and who can manage it.[8] Since at least the 1980s, historians of science and technology have developed methods for describing how work with technology is directed toward defining not only who can act but also who can speak.[9] The question of whose authority matters—and whose vulnerability—is central to this study of how crisis became embedded into everyday urban life in Morocco.

An Urban Environmental History of Colonial Construction Technologies

This dissertation presents an urban environmental history not of a particular place—Morocco or even Casablanca, which remains the focus of most of the chapters—but of the *becoming Moroccan* of a set of technologies. The technologies in question—such as cinder blocks and loan packages—are perhaps not obvious objects for environmental history.[10] Yet, thinking with construction technologies, broadly defined, opens up a number of core concerns that scholars in the field of environmental history have been systematically grappling with for the

[8] Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Chicago: University of Chicago Press, 1985).
[9] For an early example, consider for instance Shapin and Schaffer's discussion of the literary technologies Robert Boyle uses to regulate who can intervene in the determination of "scientific facts." Shapin and Schaffer, 60.
[10] I number of recent urban environmental histories, particularly within the African context, have singled out the importance of debates over building materials and urban technologies. See for instance Emily Brownell, *Gone to Ground: A History of Environment and Infrastructure in Dar Es Salaam* (Pittsburgh: University of Pittsburgh Press, 2020); Tasha Rijke-Epstein, "Architectures of Belonging: Moral Economies of Urban Place-Making in Mahajanga, Madagascar" (PhD, University of Michigan, 2017); Matthew Gandy, "Planning, Anti-Planning and the Infrastructure Crisis Facing Metropolitan Lagos," *Urban Studies* 43, no. 2 (2006): 371–96.

past three decades.[11] These technologies did not simply shape urban ecologies, they enrolled non-human entities into colonial modernization schemes. Concrete, for instance, combined local sands, local water, and industrially produced cement into a complex, hybrid object—a product of colonial labor regimes and imperial ecologies. Limestone and clay extracted from nearby quarries and processed at the Roches Noires cement plant in Casablanca circulated across the whole of the French Protectorate finding their way into rural roads and regional outposts. Matter from the local environment of one city produced national territory in the service of colonial military expansion. While no straightforward urban history can account for these movements and transformations, environmental history offers a powerful framework.

This dissertation builds on a core, but not undisputed, contribution of environmental history: the assertion that all environments are "hybrid," that is, made up of irreducible entanglements of humans, natures, and technologies.[12] Over the course of the past decade scholars in the field have confronted the implications of this principle while also grappling with its constraints and the analytic impasses that accompany it. For instance, once all environments

[11] For foundational texts in *urban* environmental history see Martin V. Melosi, "The Place of the City in Environmental History," *Environmental History Review* 17, no. 1 (1993): 1–23; William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W.W. Norton, 1991); Mike Davis, *Ecology of Fear: Los Angeles and the Imagination of Disaster* (New York: Metropolitan Books, 1998); Martin V. Melosi and Joseph A. Pratt, *Energy Metropolis: An Environmental History of Houston and the Gulf Coast* (Pittsburgh: Pittsburgh University Press, 2007); Martin V. Melosi, "Humans, Cities, and Nature: How Do Cities Fit in the Material World?," *Journal of Urban History* 36, no. 1 (January 2010): 3–21; Christine Meisner Rosen and Joel Arthur Tarr, "The Importance of an Urban Perspective in Environmental History," *Journal of Urban History* 20, no. 3 (May 1994): 299–310; Joel Arthur Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron: The University of Akron Press, 2011).

[12] As Paul Sutter has suggested, the so-called "hybrid turn" in environmental history has so far failed to provide a model for usefully distinguishing hybrid environments from one another or describing how they distribute agency *unequally* among humans and nonhumans. Paul Sutter, "The World with Us: The State of American Environmental History," *Journal of American History* (June 2013), 97; For examples notable examples of this "hybrid turn" see Richard White, *The Organic Machine* (New York: Hill and Wang, 1995); William Cronon, ed., *Uncommon Ground: Toward Reinventing Nature* (New York: W.W. Norton & Co., 1995); Brett Walker, *Toxic Archipelago: A History of Industrial Disease in Japan* (Seattle: University of Washington Press, 2010); Martin V. Melosi, "Humans, Cities, and Nature: How Do Cities Fit in the Material World?," *Journal of Urban History* 36, no. 1 (January 2010): 3–21; Matthew Gandy, *Concrete and Clay: Reworking Nature in New York City* (Cambridge, Mass.: MIT Press, 2002).

are acknowledge to be hybrid what methods exist for distinguishing between them or accounting for their distinct historical trajectories—indeed for delimiting what counts as an "environment" at all.[13] In the meantime, environmental history's methods have themselves been *hybridized*—joined together with the history of technology in the study of "envirotechnical systems," fused with approaches to the production of space and capital accumulation born of political ecology, and reoriented toward the galvanizing, interdisciplinary, and at times all-encompassing concept of the Anthropocene.[14]

These are welcome shifts that helped to form much of the conceptual backdrop of this dissertation. I have chosen, however, to take a somewhat different tack. Rather than beginning with a complex ecology or a hybrid environment, I started by following specific materials such as concrete. Concrete, as noted above, brings the environment *inside* while also changing the environment *outside*.[15] It is a hybrid object that in turn hybridizes everything it touches, including institutions and financial practices. The history of crisis technologies in Morocco undoubtedly belongs to the Anthropocene, but it is a "bottom-up" vision that reveals how sometimes minute political disputes gave rise to distinct forms of hybridity. And the hybrid

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[13] Paul Sutter provides a lucid exposition of these questions. Sutter, 97.

[14] Sara B. Pritchard, "An Envirotechnical Disaster: Nature, Technology, and Politics at Fukushima," *Environmental History* 17 (April 2012): 219-43; Erik Swyngedouw, *Liquid Power: Water and Contested Modernities in Spain, 1898-2010* (Cambridge, Mass.: MIT Press, 2015); Matthew Gandy, *Concrete and Clay: Reworking Nature in New York City* (Cambridge, Mass.: MIT Press, 2002); Jason W. Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (New York: Verso, 2015); Roderick P. Neumann, "Political Ecology: Theorizing Scale," *Progress in Human Geography* 33, no. 3 (2009): 398–406; Nancy Lee Peluso and Michael Watts, *Violent Environments* (Ithaca, NY: Cornell University Press, 2001); Molly A. Warsh, "A Political Ecology in the Early Spanish Caribbean," *The William and Mary Quarterly* 71, no. 4 (2014): 517–48; Clive Hamilton, Christophe Bonneuil, and François Gemenne, eds., *The Anthropocene and the Global Environmental Crisis: Rethinking Modernity in a New Epoch* (London; New York: Routledge, 2015); Julia Adeney Thomas, "History and Biology in the Anthropocene: Problems of Scale, Problems of Value: History and Biology in the Anthropocene," *The American Historical Review* 119, no. 5 (2014): 1587–1607; Will Steffen et al., "The Anthropocene: Conceptual and Historical Perspectives," *Philosophical Transactions of the Royal Society of London* 369, no. 1938 (2011): 842–67, https://doi.org/10.1098/rsta.2010.0327.

[15] Cf. Latour's description of the "laboratory." Bruno Latour, "Give Me a Laboratory and I Will Raise the World," in *Science Observed: Perspectives on the Social Study of Science*, eds. Karin Knorr-Cetina and Michael Mulkay (London: SAGE, 1983), 141–70.

environment that emerged from modernization schemes in Casablanca was also a distinctly *colonial* one.[16] Within it, racialized divisions between categories of residents were rendered stable features of the local ecology and the built world—shaping their access to resources and forms of bodily comfort, their exposure to hazards, and their capacity to engage technologically with the surrounding world.

By considering the role of construction technologies in the production and maintenance of such racialized environments, this dissertation engages with environmental justice, environmental histories of empire, and work on envirotechnical systems.[17] The result is an urban environmental history of colonial construction technologies narrated from the ground up by attending to deployments and debates about matter and crisis.

[16] Environmental histories of colonialism in North Africa and the Middle East have analyzed colonial imaginaries and how these interacted with material ecologies. In relation to this literature, I argue that crisis technologies—technologies that were inscribed with both sociotechnical imaginaries and material ecologies—demonstrate how the environment and knowledge of the environment are coproduced. See for instance Diana K. Davis and Edmund Burke III, eds., *Environmental Imaginaries of the Middle East and North Africa* (Athens: Ohio University Press, 2011); Diana K. Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonial Expansion in North Africa* (Athens: Ohio University Press, 2007); Adam Guerin, "Disaster Ecologies: Land, Peoples and the Colonial Modern in the Gharb, Morocco, 1911-1936," *Journal of the Economic and Social History of the Orient* 59, no. 3 (2016): 333–65; Alan Mikhail, ed., *Water on Sand: Environmental Histories of the Middle East and North Africa* (New York, NY: Oxford University Press, 2013); Alan Mikhail, "Unleashing the Beast: Animals, Energy, and the Economy of Labor in Ottoman Egypt," *The American Historical Review* 118, no. 2 (2013): 317–48; Spencer D. Segalla, *Empire and Catastrophe: Decolonization and Environmental Disaster in North Africa and Mediterranean France since 1954* (Lincoln: University of Nebraska Press, 2020).

[17] Lyn Schumaker, "Slimes and Death-Dealing Dambos: Water, Industry and the Garden City on Zambia's Copperbelt," *Journal of Southern African Studies* 34, no. 4 (2008): 823–40.; Nancy Joy Jacobs, *Environment, Power, and Injustice: A South African History* (Cambridge; New York: Cambridge University Press, 2003); Gabrielle Hecht, *Being Nuclear: Africans and the Global Uranium Trade* (Cambridge, Mass.: MIT Press, 2012); Allen F. Isaacman and Barbara Isaacman, *Dams, Displacement, and the Delusion of Development: Cahora Bassa and Its Legacies in Mozambique, 1965-2007* (Athens: Ohio University Press, 2013); Warwick Anderson, *The Cultivation of Whiteness: Science, Health, and Racial Destiny in Australia* (Durham: Duke University Press, 2006); Peder Anker, *Imperial Ecology: Environmental Order in the British Empire, 1895-1945* (Cambridge, Mass.: Harvard University Press, 2001); Richard Harry Drayton, *Nature's Government: Science, Imperial Britain, and the "Improvement" of the World* (New Haven: Yale University Press, 2000); Tom Griffiths and Libby Robin, eds., *Ecology and Empire: Environmental History of Settler Societies* (Seattle, Wash.: University of Washington Press, 1997); Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600-1860* (Cambridge; New York: Cambridge University Press, 1996).

Colonial Urban Histories

Framing this account as an urban environmental history represents a departure in form and method from previous work on colonial urbanism. I draw extensively from the deep and empirically rich scholarship on Morocco's urban history produced by architectural historians, sociologists, scholars of colonialism, and others. These groups have long approached Protectorate urbanism through a series of dualities: Moroccan *madīna* and European *ville nouvelle*; the symbolic reinforcement of traditional authority and the expansion of new techniques of statecraft; cultural preservation and the fetishisization of difference on the one hand, modernist transformation and capitalist appropriation on the other.[18] These dualities worked not in opposition but alongside one other, remaking urban forms and forms of life across the country. During the first three decades of the Protectorate, the early industrialization of cities such as Casablanca, the steady inflow of rural migrants fleeing famine and displacement, the outbreak of epidemics and hygienic interventions fundamentally transformed urban life. At the same time, the "colonial city" became an object of analysis and practice—a figure designating a distinct kind of social and spatial reality—for planners, engineers, and officials as well as artists, labor organizers, and residents.

Casablanca, the largest city and economic capital of the Protectorate, became the emblematic site of these urban transformations in spite of its exceptional status among Moroccan cities. Numerous architectural and urban histories have charted the city's unique trajectory

[18] For only a few examples of how these dualities are put to work in older and more recent scholarship see Daniel Rivet, *Lyautey et l'institution du Protectorat Français Au Maroc, 1912-1925*, 3 vols. (Paris: L'Harmattan, 1998); Gwendolyn Wright, *The Politics of Design in French Colonial Urbanism* (Chicago: University of Chicago Press, 1991); Paul Rabinow, *French Modern: Norms and Forms of the Social Environment* (Cambridge, Mass.: MIT Press, 1989); Janet L. Abu-Lughod, *Rabat: Urban Apartheid in Morocco* (Princeton: Princeton University Press, 1977); Rahma Bourqia and Susan Gilson Miller, eds., *In the Shadow of the Sultan: Culture, Power, and Politics in Morocco* (Cambridge, Mass.: Harvard University Press, 1999); Jean-Louis Cohen and Monique Eleb, *Casablanca: Colonial Myths and Architectural Ventures* (New York: The Monacelli Press, 2002).

including the creation of its relatively large European colony, its rapid industrial development, and its role as a central hub of investment and accumulation.[19] In older accounts of colonial urbanism, two parallel processes molded the city into a testing ground for urban forms and legislation in the French Empire as a whole. First, Resident General Hubert Lyautey and Henri Prost, his chief urbanist from 1913 to 1923, established a system of formal segregation between the European v*ille nouvelle* and the Moroccan *madīna* accompanied by a series of architectural directives that prohibited major modifications to homes and historic buildings in the latter. After less than a decade, the European city had enveloped Casablanca's relatively small and now overpopulated *madīna.*[20] Unable to find housing in the old city, migrants from the Moroccan countryside settled in the *qaryan,* slums on the outskirts, often near the small but rapidly expanding industrial zone.[21] The second process was the transformation of the land tenure system in Morocco and the gradual dispossession of many local residents.[22] The French regarded lands legally belonging to the Sultan and property administered by the Ministry of Religious Endowments (*ḥubūs* or *awqāf*) as public land that could be leased and later auctioned off to members of the settler community. Income generated from the rental and sale of such properties—where Moroccan residents had previously exercised rights of occupancy—would go to finance public works projects that disproportionately serviced the European city.[23]

Michel Écochard's tenure as the Protectorate's chief urbanist from 1946 to 1952 often

[19] For one early example see André Adam, *Casablanca: Essai sur la transformation de la société marocaine au contact de l'Occident* (Paris: Éditions du Centre national de la recherche scientifique, 1972).
[20] Wright, *The Politics of Design in French Colonial Urbanism*, 52-52.
[21] The term *qaryan* in Moroccan Daija, which refers to slums or *bidonvilles* in French*,* most likely comes from the name of one of Casablanca's first informal settlements that formed in the Carrières centrales during the 1920s. Carrières centrales likely took their name from the nearby power station. Susan Slyomovics, *The Performance of Human Rights in Morocco* (Philadelphia: University of Pennsylvania Press, 2005), 105.
[22] For a discussion of capitalist dispossession and disaster in the Gharb see Adam Guerin, "Disaster Ecologies: Land, Peoples and the Colonial Modern in the Gharb, Morocco, 1911-1936," *Journal of the Economic and Social History of the Orient* 59, no. 3 (2016): 333–65.
[23] Abu-Lughod, *Rabat: Urban Apartheid in Morocco*, 160-166.

serves as a point of rupture in this narrative. Against Prost's dualistic urbanism of neglected old cities and radial *villes nouvelle*s, Écochard promoted a transition to linear planning and an ideology of "housing for the greatest possible number."[24] At the same time, Écochard's postwar urban interventions—inspired by the principles of Le Corbusier's Athens Charter and the International Congresses of Modern Architecture (CIAM)—constituted a paradigmatic "failure" of modernist planning, grossly underestimating the future housing requirements of cities such as Casablanca and "[reinforcing] the spatial separation of Europeans, [Muslim] Moroccans, and Jews."[25] Ongoing housing shortages in Casablanca—a major focal point of the first two chapters—also pushed many lower-status European workers—often Spanish or Italian—to seek lodging in the city's expanding slums alongside migrants from the Moroccan countryside. In spite of their "failures," the urban imaginaries of Prost and Écochard as well as later postcolonial officials like M'hamed Douiri and Hassan Zemmouri left behind not only maps, designs, and other visual supports for modernist fantasies but also a material archive—a colonial and postcolonial built environment inscribed with all the compromises and contradictions of modernization schemes.

Recent scholarship on colonial urbanism in Morocco has shifted from broad strokes characterizations of "segregation" or "urban apartheid" to polyvalent accounts that emphasize the contradictions of French urban experiments. New approaches have explored the ways that different categories of Moroccan city-dwellers drew upon Protectorate strategies and institutions—such as municipal councils and public health programs—to articulate their own claims.[26] Others have demonstrated the necessity of focusing on broader conceptions of

[24] Cohen and Eleb, *Casablanca,* 303-304.
[25] Rabinow, *French Modern,* 4.
[26] See for example Ellen J. Amster, *Medicine and the Saints: Science, Islam, and the Colonial Encounter in Morocco, 1877-1956* (Austin: University of Texas Press, 2013), 111-112; For an account of the gendering of

territoriality alongside narrowly urban interventions.[27] A general turn in much recent work has been away from older visions of a bifurcated or segregated colonial city toward a heightened appreciation of forms of hybridity, *métissage,* and cultural exchange.[28] Finally, new sites and objects have emerged as vantage points for the study of Moroccan urbanism including built infrastructures, bodies, spirits, and food.[29]

Building upon this work, I want to suggest that the most lasting legacy of colonial urbanism lies in the domain of the "technical," the "material," and the "environmental." Examining day-to-day disputes over regulation and construction reveals the subtle ways in which colonial practices of neglect, segregation, and clientism were literally built into the urban environment—less through explicit policies than through the flexible, often informal, application of regulatory measures and the calculated delay of infrastructure and housing projects. These practices are key to understanding how the modernist fantasy of a manageable, multi-racial urban landscape both depended upon and was ultimately undermined by the technological affordances

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colonial urban space see Driss Maghraoui, "Gendering Urban Colonial Casablanca," in *Gendering Urban Space in the Middle East, South Asia, and Africa*, eds. Martina Rieker and Kamran Asdar Ali (New York: Palgrave Macmillan US, 2008), 17–43. For a guide to archives of local perspectives on colonial urbanism see Stacy E. Holden, "Constructing an Archival Cityscape: Local Views of Colonial Urbanism in the French Protectorate of Morocco," *History in Africa* 34 (2007): 121–32.

[27] Hassan Radoine, "French Territoriality and Urbanism: General Lyautey and Architect Prost in Morocco (1912-1925)," in *Colonial Architecture and Urbanism in Africa*, ed. Fassil Demissie (New York: Routledge, 2012), 11–31; Jonathan Wyrtzen, *Making Morocco: Colonial Intervention and the Politics of Identity* (Ithaca: Cornell University Press, 2016); Abel Albet-Mas et al., "Géographie, aménagement du territoire et colonialisme espagnol au Maroc," *Cahiers de géographie du Québec* 39, no. 106 (1995): 43–59.

[28] See for example, Diana Wylie, "Moroccan Urbanism: A Case Study in Colonial and Post-Colonial Métissage," in *Multicultural Urban Fabric and Types in the South and Eastern Mediterranean*, eds. Maurice Cerasi et al., Beiruter Texte Und Studien 102 (Würzburg: Ergon Verlag in Kommission, 2007), 225–39; Susan Gilson Miller et al., eds., *The Architecture and Memory of the Minority Quarter in the Muslim Mediterranean City* (Cambridge, Mass.: Harvard University Graduate School of Design, 2010).

[29] Stacy E. Holden, *The Politics of Food in Modern Morocco* (Gainesville: University Press of Florida, 2015); Amster, 110-141; Carmen Ascanio-Sanchez, Miguel Suárez Bosa, and Juan Carlos Almeida Pérez, "Tradition and Modernity: The Water Sector in Morocco during the French Protectorate (1912–1956)," *African Historical Review* 51, no. 1 (2019): 67–86. In a contemporary context, Emilio Spadola considers how different forms of spiritual and technological work with *jinn* mediate relations between social classes in urban Morocco. Emilio Spadola, *The Calls of Islam: Sufis, Islamists, and Mass Mediation in Urban Morocco* (Bloomington; Indianapolis: Indiana University Press, 2014).

and the environmental excesses of modernization schemes. This involves questioning the supposedly "bipolarized" nature of Moroccan cities under the Protectorate, to consider how the material core of urban modernization—concrete construction—was from the very beginning entangled with the skills, labor, and lifeworlds of local residents.

Put another way, tracking construction technologies historically provides a vantage point for examining the creation of one particular colonial, racialized environment, where segregationist logics were only one facet (and often the least important) in the production of urban space. Following Sherene Razack, I take racialization to be a spatial and historical process that builds up in material forms.[30] Segregation was not synonymous with racialization. During the later years of the Protectorate forms of "flexible planning" that aimed to enhance the mobilities of racialized bodies through urban space became just as, if not more, instrumental to colonial governance.[31]

While this dissertation is primarily concerned with colonial and postcolonial urban history, it cannot ignore the lasting resonance of precolonial structures, laws, regulations, and practices within the projects of planners and the strategies of residents. The first chapter delves briefly into Morocco's urban history during the eighteenth and nineteenth centuries. I largely sidestep debates over the nature or the existence of an "Islamic Urbanism" or a "Muslim City,"

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[30] Sherene Razack, "When Place Becomes Race?," in *Race and Racialization: Essential Readings*, eds. Tania Das Gupta et al. (Toronto: Canadian Scholars, 2018), 113–26.

[31] France's colonial venture in North Africa was fundamentally predicated on the category of race and the production and reproduction of racialized distinctions between colonial subjects, whether these were conceptualized in biological, psychological, environmental, cultural, or other terms. Moreover, racializing policies and programs in North Africa were also about defining race in the metropolitan context. Richard C. Keller, *Colonial Madness: Psychiatry in French North Africa* (Chicago: University of Chicago Press, 2007); Abdelmajid Hannoum, *Violent Modernity: France in Algeria* (Cambridge, Mass.: Center for Middle Eastern Studies of Harvard University Press, 2010); Patricia M. E. Lorcin, *Imperial Identities Stereotyping, Prejudice, and Race in Colonial Algeria* (Lincoln: University of Nebraska Press, 2014); Richard Standish Fogarty, *Race and War in France: Colonial Subjects in the French Army, 1914-1918* (Baltimore: Johns Hopkins University Press, 2008); Osama Abi-Mershed, *Apostles of Modernity: Saint-Simonians and the Civilizing Mission in Algeria* (Stanford, Calif.: Stanford University Press, 2010).

however, opting instead to look at how European and Moroccan actors under the Protectorate mobilized politically charged understandings of the precolonial past to argue over the legitimacy of particular approaches to managing colonial cities.[32] The literature that I draw upon to characterize urban life prior to 1912 is largely specific to Morocco—as opposed to making wider claims about Middle Eastern or Muslim cities in general.[33]

One thread running through the first three chapters of this dissertation concerns the encounter between French attempts to manage matter in the colonial city and deeply rooted Islamic ways of providing and provisioning within urban settings. This involves examining the links between the colonial construction economy and the precolonial system of religious endowments—*waqf*, or *ḥubs* as it is typically known in the Maghrib—which served as a socio-legal framework for distributing a variety of different services and resources to urban residents. Like the question of technology transfer, I consider this encounter not as a mere imposition or grafting of the colonial onto the precolonial, but rather as a dynamic and asymmetrical interaction over the course of which a set of institutions, practices, and concepts unique to

[32] In the Moroccan context, Said Ennahid has described practices of urban regulation in medieval Fez and Muhammad Zaliji has provided a legal history of architectural regulation and security in the country. This includes an account of the references to construction techniques and materials within the Qur'an and Hadith, Roman law, and French legal codes. Said Ennahid, "Access Regulation in Islamic Urbanism: The Case of Medieval Fès," *The Journal of North African Studies* 7, no. 3 (2002): 119–34. Muhammad Zaliji, *Al-ḥaq fī al-ḍimān al-mimārī* (Oujda: Maṭbaʿa al-jusūr, 2011), 23-28.

[33] That said, scholars such as Besim Hakim—sometimes accused in debates over the "Islamic City" of adopting a Neo-orientalist perspective (AlSayyad 37)— have developed what I consider compelling arguments about how *law* comes to be embodied in built forms. Hakim argues that law—in the Tunisian context Maliki jurisprudence specifically—constituted a cohesive system of urban regulations. This system developed in relation to both textual sources—the Qur'an and Hadith as well as the existing corpus of Maliki *fiqh* itself—and to fluctuating social norms and historical circumstances. Hakim convincingly demonstrates that *fiqh*—not an isolated textual tradition but a form of historically responsive social praxis—defined certain key principles and problems for urbanism. These consisted of 1) the nature and placement of public thoroughfares, "2) locational restrictions of uses causing harm, such as smoke, offensive odour, and noise; 3) overlooking issues, including visual corridors generated by doors, window openings, and heights; 4) walls between neighbors….5) drainage of rain and waste water…." (Hakim 81). The question remains, however, how exactly these core urban issues in Maliki *fiqh* translated into built forms and what kinds of conflicts and tensions accompanied this process. Besim S. Hakim, "Law and the City," in *The City in the Islamic World*, eds. Salma Khadra Jayyusi et al. (Leiden; Boston: Brill, 2008), 71–92; Nezar AlSayyad, *Cities and Caliphs: On the Genesis of Arab Muslim Urbanism* (New York: Greenwood Press, 1991).

Morocco (though resonant across the Maghrib) emerged. While shifts in the status and function of *ḥubus* property under the Protectorate are not the focus of this dissertation, these changes were of central importance to the European and Moroccan actors whom I follow. When colonial officials sought to shore up their support among religious leaders by providing cement for Qur'anic schools, when Moroccan nationalists invoked notions of piety and corruption in discussing the built environment, or when planners created institutional structures for transforming Muslim notables into model capitalists, each of these groups engaged notions about how an Islamicly grounded precolonial urban order had operated.[34] Whether or not these conceptions reflected accurate readings of Morocco's history is of secondary importance. The precolonial past—a constantly reanimated point of reference—was a vital part of the colonial and postcolonial urban environment.[35]

Technology and Culture in Colonial Morocco

Histories of colonial urbanism in Morocco, as well as histories of the Protectorate more generally, have yet to grapple effectively with the concept of *technology* and its relationship to colonial projects. One reason has been a tendency in both colonial sources and in historical work on the Protectorate to separate the seemingly technical aspects of the Protectorate's modernization efforts from their cultural and social impacts. For instance, while a scholar such as Daniel Rivet considers in detail the importance of port, road, and rail construction to Lyautey's vision for the Protectorate, he does not assign the everyday conflicts and technical minutiae

[34] One might ask in the tone and spirit of Shahab Ahmed, "What is Islamic about Moroccan concrete?" Shahab Ahmed, *What Is Islam?: The Importance of Being Islamic* (Princeton; Oxford: Princeton University Press, 2016).
[35] Recent scholarship has emphasized how an ideologically diverse spectrum of actors from colonial officials to nationalists mobilized particular periods of Moroccan history in the formulation of their own projects. See Eric Calderwood, *Colonial Al-Andalus: Spain and the Making of Modern Moroccan Culture* (Cambridge, Mass. ; London: Belknap Press: An Imprint of Harvard University Press, 2018).

involved in the construction of such projects any particular significance.[36] Similarly scholars of Moroccan intellectual history have situated technology and modernization largely as discursive reference points in the works of prominent Muslim intellectuals without considering their relationship to the on the ground experiences of living and working with urban technologies.[37]

I do not intend to emphasize *technology* at the expense of *culture, politics,* or *society* in narrating the history of Morocco's colonial encounter and its afterlives. Rather, I draw on categories from the history of technology to follow objects and practices that ceaselessly traverse any supposed boundaries between these domains. I consider *sociotechnical* arrangements of institutions, artifacts, and people as well as the *technopolitical* projects that aim to reformat these arrangements to restrict or extend the agency of particular actors.[38] The supposed separation between technology and culture was itself the outcome of sustained political work. Specifically, colonial experts during the Protectorate deployed this imagined division to justify the colonial project itself—casting Europeans as bears of technology, Moroccans as bearers of culture. It is a dichotomy that continues to resonate today—demarcating practices, objects, and materials that are considered *authentically* Moroccan from those that originated in colonial projects. Scholarly

[36] Daniel Rivet, *Lyautey et l'institution du Protectorat français au Maroc, 1912-1925*, vol. 3 (Paris: L'Harmattan, 1998), 131-135.

[37] In Ahmed Idrissi Alami's reading of eighteenth and nineteenth century Moroccan travel writers such as Muhammad as-Saffar, "technology" largely appears to serve as a marker for "Western modernity," something foreign that Moroccans must chose how and when to appropriate. Ahmed Idrissi Alami, *Mutual Othering: Islam, Modernity, and the Politics of Cross-Cultural Encounters in precolonial Moroccan and European Travel Writing* (Albany: SUNY Press, 2013), 48.

[38] I use the term sociotechnical arrangements here rather than sociotechnical systems to emphasize the *ad hoc* and continuously renegotiated nature of these forms of organization. Constant *technopolitical* work is required to maintain such arrangements—for instance the colonial construction economy—in place. I find Sheila Jasanoff and Sang-Hyun Kim's discussion of "sociotechnical imaginaries" as "collectively imagined forms of social life and social order reflected in the design and fulfillment of nation-specific scientific and/or technological projects," especially useful for framing how visions of proper relations between different kinds of colonial subjects were embedded within modernization schemes in Morocco. Sheila Jasanoff, "Introduction" in *Dreamscapes of Modernity : Sociotechnical Imaginaries and the Fabrication of Power*, eds., Sheila Jasanoff and Sang-Hyun Kim (Chicago ; London: The University of Chicago Press, 2015), 14. See Hecht's definition of technopolitics referenced earlier. Hecht, *The Radiance of France,* 56-57.

approaches emphasizing the "hybridities" produced by the colonial encounter end up preserving this dichotomy to the extent that the concept of hybridity is used to suggest the combination of two distinct worlds. I focus instead on a set of materials that were instrumental in the composition of a shared world in colonial Morocco—materials that came, after much conflict and debate, to form the unquestioned background of urban everyday life.[39]

Concrete—though it is not the only technology (or cluster of technologies) that I consider—occupies a central place within this dissertation. This is due in part to its ubiquity within the colonial archive and its material omnipresence in contemporary Moroccan cities. Other construction materials such as brick and steel make occasional appearances within the chapters that follow and could arguably have constituted alternative poles for exploring a similar set of questions. Aside from its general pervasiveness, concrete also presents a number of unique problematics that justify its prominence in this study. The cement used to make concrete was the product of a complex industrial process through which colonial labor relations took shape. The aggregate and water mixed with cement to make concrete brought questions about the local environment into every facet of the construction process. As an object of knowledge for engineers, architects, and builders, concrete's precise properties and ideal uses were subject to constant "boundary work" by competing communities of experts.[40] Symbolically, concrete's status as the signifier for modernization itself makes it an unavoidable object of analysis. In the

[39] For colonial administrators in Morocco, technology—especially construction technology—was also the means of mediating between the supposedly distinct domains of "society" and "economy." I aim to bring together the work of Paul Rabinow and Timothy Mitchell on these two concepts. At key moments in this account, "society" and "economy" were invented, imagined, and constructed in relation to one another, and often colonial officials imagined "the technical" as the bridge between them. Rabinow, 11; Timothy Mitchell, "Fixing the Economy," *Cultural Studies* 12, no. 1 (1998): 82–101.

[40] "Boundary work" in Thomas Gieryn's usage is "the adjudication of competing truths and rival reality…[that is] accomplished in and through provisional settlements of the boundaries of science." The term "technology" or rather "technoscience" can be easily substituted for "science" here. Thomas F Gieryn, *Cultural Boundaries of Science: Credibility on the Line* (Chicago: University of Chicago Press, 1999), 2.

chapters that follow, I demonstrate that concrete—like forms of housing finance and other crisis technologies that enter in chapter three—was not a European technology imposed on Morocco at the beginning of the Protectorate, but rather a product of different intersecting networks including embodied practices, forms of labor organization, regulatory institutions, and ecologies in which various groups of Europeans and Moroccans participated, albeit asymmetrically.

As is hopefully clear, this is not a straightforward history of technology transfer in which sociotechnical objects traversed the Mediterranean to be ascribed with new meanings in a colonial context.[41] Nor is it a history of local knowledges and techniques that remained outside of European influence.[42] Instead, this dissertation takes concrete—as well as housing finance, cement production, and series of others nodes in the country's construction economy—as sites of conflict, negotiation, and creativity where Moroccans and Europeans built a new backdrop for urban life. Construction, moreover, encompasses not only the process of building, but also the work of demolishing and maintaining.[43] Practices of repair and demolition were, like building,

[41] I draw a distinction here with histories of empire that frame the relationship between colonialism and technology as one of "technology transfer." While drawing extensively on studies of colonial technology, this project aims to show not only how colonial technologies remade local environments or social relations, but also how they were remade by them. Daniel R. Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1940* (Oxford University Press, 1993); Libbie Freed, "Networks of (Colonial) Power: Roads in French Central Africa after World War I," *History and Technology* 26, no. 3 (2010): 203–223; Jiat-Hwee Chang, *A Genealogy of Tropical Architecture: Colonial Networks, Nature and Technoscience* (New York: Routledge, 2016); On Barak, *On Time: Technology and Temporality in Modern Egypt* (Berkeley: University of California Press, 2013); Joshua Grace, "Heroes of the Road: Race, Gender and the Politics of Mobility in Twentieth-Century Tanzania," *Africa: Journal of the International African Institute* 83, no. 3 (2013): 403–25.

[42] Clapperton Mavhunga's work has productively engaged with local forms of knowledge and practice to push for a wider, more encompassing definition of "technology" as "means of living and being alive" that are integrated into social and material life. Clapperton Chakanetsa Mavhunga, *Transient Workspaces Technologies of Everyday Innovation in Zimbabwe* (Cambridge, Massachusetts: The MIT Press, 2014), 15; Clapperton Chakanetsa Mavhunga, *The Mobile Workshop: The Tsetse Fly and African Knowledge Production* (Cambridge, Massachusetts: The MIT Press, 2018).

[43] In contrast to recent work in the history of technology on repair and maintenance that emphasizes how these practices have been marginalized at the expense of innovation, I show how maintenance and repair were at times central to the political priorities of colonial officials. See chapter two of this dissertation especially. For ways of analyzing repair and demolition in relation to wider political shifts see Steven J. Jackson, "Rethinking Repair," in *Media Technologies: Essays on Communication, Materiality and Society*, eds. Tarleton Gillespie, Pablo Boczkowski, and Kristen Foot (Cambridge, Mass.: MIT Press, 2014); Gastón Gordillo, *Rubble: The Afterlife of Destruction* (Durham: Duke University Press, 2014); Francesca Russello Ammon, *Bulldozer: Demolition and Clearance of the Postwar Landscape* (New Haven: Yale University Press, 2016). Andrew L. Russell and Lee

marked by the imperatives of crisis, while also revealing the contradictory projects and programs of different sets of actors involved in construction work.

I will argue that Morocco's urban crisis—a crisis composed of shifting elements, but which always remained a crisis of authority and of agency—was materialized and reproduced through particular technologies. The history of urban crisis in Morocco and of crisis technologies are co-constitutive with the history of concrete construction. Concrete, moreover, did not just remake Morocco, it was remade as Moroccan. Just as concrete became embedded within everyday life—into the walls, pipes, and poles that composed the urban fabric of cities like Casablanca—it was also inscribed with competing projects (the colonial visions of French urbanists and the anticolonial programs of nationalists), knowledges (of French structural engineers and Moroccan *muʿallimūn),* discourses (understandings of modernism as liberatory or oppressive), socioenvironmental relations (the organization of cement plant and economies of resource extraction), and a range of other oppositions. *Moroccan concrete* is a difficult object for the history of technology because of how it dissolves the division between "users" and "designers," the symbolic and the material, high and low tech, infrastructure and environment.

This formulation raises another set of questions, however: what exactly is Moroccan about Moroccan concrete? For whom is concrete Moroccan? When and under what conditions? If cement imported to Casablanca from a Belgian factory in the 1930s, is mixed with local aggregate and poured by Andalusian workers under the watchful eye of a Genovese foreman to construct an apartment building designed by a French architect and inhabited exclusively by Europeans in what sense is this process "Moroccan"? One approach to these questions would be to discuss the Protectorate and the first decades of Morocco's independence in terms of

Vinsel, "After Innovation, Turn to Maintenance," *Technology and Culture* 59, no. 1 (May 2018): 1–25.

concrete's gradual *becoming Moroccan,* as locally produced cement replaced imports, Moroccan factory and construction workers as well as engineers and architects replaced Europeans, and more and more Moroccan city-dwellers came to reside in structures in which concrete was the key structural component. My intention, however, is to assert that from the very beginning of the Protectorate concrete was made Moroccan. It was entwined with notions of the precolonial urban order, with embodied forms of knowledge and skill possessed by Muslim workers, with the aspirations and political projects not only of European designers but also of Moroccans at every stage of the construction process from extraction to inhabitation. To be made Moroccan also meant that the particularities of Moroccan environments—from the aridity or humidity of the local climate to the salt content of Moroccan rivers and the chemical composition of Moroccan limestones—were inseparable from the construction process. Colonial engineers in the country were well aware—and risked potential disaster if they failed to remember—that Moroccan concrete was a fundamentally different material than French concrete. Nor were they ignorant of the fact that these differences stemmed in part from the political economy of the colonial situation itself. Far from producing a standardized and homogenized urban built environment, everywhere they went, colonial materials like concrete produced new contradictions, heterotopias, excesses and impasses for experts, officials, and others to reckon with.

A project attuned to these varied deployments of materials cannot avoid contending with the rise of a particularly problematic category—namely the notion of *materiality.*[44] While historians of technology have produced an expansive empirical and theoretical literature on the relationships between matter and social order, much new historical and anthropological work on materiality bypasses this field entirely, drawing instead on studies of material culture or vitalist

[44] For a useful critique of the concept of "materiality" itself see Tim Ingold, "Materials against Materiality," *Archaeological Dialogues* 14, no. 1 (2007): 1–16.

philosophical traditions.[45] From a somewhat reductive perspective, there are broadly two dominant concepts of materiality circulating in contemporary scholarship: 1) materiality as a set of affordances; 2) materiality as *excess*, as the quality of things that *resists.* The first definition considers materiality as the property of a technology, object, or infrastructure that enables it to accomplish particular forms of work—whether cultural, social, political, or "purely" technical.[46] The second takes materiality to be nearly the opposite, the characteristic of matter that disrupts its smooth functioning within a wider network, the properties that escape mastery within technological systems.[47]

While these two notions—which I gloss as materiality as affordance vs. materiality as excess—can be distinguished in recent scholarship, they certainly do not constitute the only poles for debates over matter.[48] Rather than adopting a systematic definition of materiality, I

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[45] Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010). The tendency of "vitalist" visions of matter to "depoliticize" has been much critiqued of late. See for example, Kyla Schuller, *The Biopolitics of Feeling,* 11; Angela Willey, "A World of Materialisms: Postcolonial Feminist Science Studies and the New Natural," *Science, Technology, & Human Values* 41, no. 6 (2016): 991–1014. As Chris Otter notes, scholarship on the Social Construction of Technology (SCOT) has long demonstrated that matter is always historical mediated. Chris Otter, "Locating Matter: The Place of Materiality in Urban History," in *Material Powers: Cultural Studies, History and the Material Turn*, ed. Tony Bennett and Patrick Joyce (London ; New York: Routledge, 2010), 44. Tim Ingold has also critiqued the emphasis within studies of material culture on finished artifacts as opposed to properties and qualities. Tim Ingold, "Toward an Ecology of Materials," *Annual Review of Anthropology* 41, no. 1 (2012): 427–42.

[46] For an example, that emphasizes "the distinctive kinds of effecivity that material objects and processes exert," see Tony Bennett and Patrick Joyce, "Material Powers: Introduction," in *Material Powers: Cultural Studies, History and the Material Turn*, eds. Tony Bennett and Patrick Joyce (London ; New York: Routledge, 2010), 5. For another collection that broadly focuses on questions of effectivity and affordance see Diana H. Coole and Samantha Frost, eds., *New Materialisms: Ontology, Agency, and Politics* (Durham; London: Duke University Press, 2010).

[47] Examples emphasizing "excess" include Bill Brown, "Thing Theory," *Critical Inquiry* 28, no. 1 (2001): 1–22; Bennett's discussion of "thing-power" also tends to focus on the qualities of matter that exceed their position in various assemblages. Bennett, xvi-xvii.

[48] Two contemporary versions of "material semiotics" mark another bifurcation in terms of how to approach materiality. John Law has articulated an ANT take on the question in the following terms: "*semiotics…*tells that entities take their form and acquire their attributes as a result of their relations with other entities…actor-network theory may be understood as a *semiotics of materiality*." John Law and John Hassard, *Actor Network Theory and After* (Malden, Mass.: Blackwell, 1999), 3-4; This approach, with its emphasis on how material things take shape and form in relation to other material things—for example, how any given technology only performs work through its relations to a wider socio-technical assemblage—stands in contrast to the materially grounded semiotics of Charles Peirce. Unlike the ANT approach, new iterations of Peircean semiotics call attention to how the material properties of things are bound up in processes of meaning making. In the example of "redness" discussed by Webb Keane, it is the fact that redness is materially embodied within, for instance, an apple, that the quality of redness

propose to study how historical actors craft and strategically shift between different notions of the material.[49] Colonial engineers under the Protectorate for instance constantly alternated between differing theories of matter in their treatment of concrete. At times they referred to it as an inert object with knowable properties, at others as a vital and unpredictable substance. At times engineers cast concrete's properties as a neutral, purely technical question, at others they openly recognized that the very make-up of concrete was culturally and socially mediated. This is to say nothing of Moroccan masons, laborers, construction workers, and others who brought their own theories of matter to bear on the finished product that was Moroccan concrete. Actors, even those most often accused of treating matter as inert, consistently deployed and adapted differing theories of materiality to suit changing historical circumstances. Any concept of the material that responds to the complex and strategic ways that matter matters needs to encompass both dead and vibrant matter, affordance as well as excess. This means attending to the conflicts, debates, and contradictions that arise in historically situated attempts to describe what matter is and what it does.

Development, Neoliberalism, Modernization

The chronological core of this dissertation—the post-WWII period to the beginning of the years of lead in the mid-1970s—is a period associated in Morocco with CIAM-influenced

becomes linked to other qualities (shape, weight, smoothness) through a process of "bundling." In this approach, its not simply that material things take on meaning in relation to one another, but that their meanings, associations, and qualities take shape in reference to their materialities through such processes of bundling. Webb Keane, "Semiotics and the Social Analysis of Material Things," *Language & Communication* 23 (2003), 414; Krisztina Fehérváry, *Politics in Color and Concrete: Socialist Materialities and the Middle Class in Hungary,* (Bloomington: Indiana University Press, 2013), 7-12.

[49] Andrew Barry suggests the necessity of considering how "information" about materials is produced in the first place, how their properties are bound up with wider controversies. Andrew Barry, *Material Politics: Disputes Along the Pipeline* (Malden, MA: Wiley-Blackwell, 2013), 12. Angela Willey also argues that new materialist scholarship needs to systematically account for the forms of power bound up with knowledge claims (specifically those of experts) about what matter is and how it performs. Willey, 991. These two insights have strongly guided my methodological approach throughout this project.

urban planning, technical standardization in engineering, and colonial and postcolonial ideologies of developmentalism. This temporal framing calls attention to processes and practices that spanned the process of formal decolonization and Morocco's independence in 1956. Continuities between the colonial and the postcolonial period were at once aesthetic, institutional, and technopolitical—embodied in projects such as the reconstruction of Derb Jdid in Casablanca and the city center of Agadir after the 1960 earthquake. Colonial corporations such as the Compagnie immobilière franco-marocaine (CIFM) would adopt more palatable postcolonial titles such as the Compagnie immobilière et foncière marocaine (CIFM), while maintaining the same acronyms. Yet important and sometimes forgotten points of rupture existed as well, such as the postcolonial state's singling out of "home ownership" as a central part of the nationalist project. Other significant breaks took place years after formal independence such as the gradual "Moroccanization"—the hiring of Moroccans to replace Europeans—of the administration and major companies in the country. But bridging the postcolonial divide is only one temporal aim of this dissertation. The other involves uncovering new lines of connection between this thirty-year period, from approximately 1945 to 1975, and the present.

In Morocco today neoliberal megaprojects have garnered a great deal of scholarly attention both for their rapid and spectacular capacity to transform urban space and their supposed novelty vis-à-vis early formers of urban governance.[50] Koenraad Bogaert's recent study

[50] Scholars, critical geographers in particular, have explored transformations of space and society in Morocco, dubbed "neoliberal," through a wide range of mediums from cinema to urban planning to resistant forms of dwelling. Diana K. Davis, "Neoliberalism, Environmentalism, and Agricultural Restructuring in Morocco," *The Geographical Journal* 172, no. 2 (2006): 88–105; Koenraad Bogaert, "New State Space Formation in Morocco: The Example of the Bouregreg Valley," *Urban Studies* 49, no. 2 (February 2012): 255–70; Koenraad Bogaert, "The Problem of Slums: Shifting Methods of Neoliberal Urban Government in Morocco," *Development and Change* 42, no. 3 (2011): 709–31;William E. Kutz, "Financing Demand-Side Urbanism: Lessons from the 'Spatial Fix' in Tangier, Morocco" (PhD, Clark University, 2013); William Kutz, "Financialization Interrupted," *City* 22, no. 4 (July 2018): 568–83; Mona Atia, "Refusing a 'City without Slums': Moroccan Slum Dwellers' Nonmovements and the Art of Presence," *Cities*, March 26, 2019. On new infrastructural and logistical techniques for managing global flows through Morocco see Janell Rothenberg, "The Social Life of Logistics on the Moroccan Mediterranean Coast" (PhD, Los Angeles, UCLA, 2015). On new neoliberal aesthetics in Moroccan cinema see Jamal Bahmad, "From

has been one of the most comprehensive.[51] Bogaert divides the Moroccan experience of neoliberalism into two periods—the "roll-back" phase of the 1980s following the country's acceptance of a structural adjustment package and the cutting of myriad state services and social programs, followed by the "roll-out" phase of the 1990s and 2000s which saw the creation of initiatives designed to wring new forms of value from the urban social fabric. Among these new projects, the 2004 Cities Without Slums program was the most wide-ranging—provoking demolition campaigns and the construction of new low-cost housing across the country. Adopted in the aftermath of the 2003 Casablanca bombings, the program is only the most recent iteration in a long history of state officials favoring slum clearance and rehousing as a means of managing popular dissatisfaction. While these recent developments fall beyond the scope of this dissertation, Morocco's neoliberal present constitutes a constant point of reference, in part because of the ways that its critics have persisted in misreading the developmentalism of the mid-twentieth century.

The Cities Without Slums program and others like it, are not novel neoliberal impositions but, in many ways, a return to colonial-era strategies of urban governance. The neoliberal consensus that took hold in state ministries and offices beginning in the 1980s was planted in fertile soil—layers of institutional, practical, and conceptual sediment left behind by the Protectorate. While Bogaert acknowledges that state developmentalism in Morocco was never totalizing in practice, he overlooks the links between the policies and projects of the late colonial and early postcolonial periods.[52] Colonial and postcolonial urban interventions in Morocco were

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Casablanca to Casanegra: Neoliberal Globalization and Disaffected Youth in Moroccan Urban Cinema," *Middle East Journal of Culture and Communication* 6, no. 1 (January 1, 2013): 15–35; Jamal Bahmad, "Mapping Moroccan Neoliberalism: Melodrama and Realist Aesthetics in the Films of Hakim Noury," *The Journal of North African Studies* 21, no. 1 (January 1, 2016): 108–15.

[51] Koenraad Bogaert, *Globalized Authoritarianism: Megaprojects, Slums, and Class Relations in Urban Morocco* (Minneapolis; London: University of Minnesota Press, 2018).

[52] Bogaert, *Globalized Authoritarianism,* 63-69.

not the *dirigiste* fantasies they are often imagined to be. Instead colonial urbanism in Morocco, especially during the late 1940s and 1950s bequeathed a set of techniques and conceptions to urban officials that laid the groundwork for practices of neoliberalism in the 1980s and in the contemporary world. As Stephen Collier suggests, the study of "neoliberalism" cannot only be concerned with the general principles of a minor tradition in economic thought but must also come to terms with the vast and at times contradictory set of practices and policies uncomfortably grouped under its mantle.[53] This involves considering how reformers attached neoliberal ideas—about privatization, the creation of entrepreneurial subjects, the precise role of the state, the nature of debt and ownership—to preexisting infrastructures and institutions.

Taking the prehistory of neoliberalism seriously requires more than a simple adjustment to the periodization of state policy. In the Moroccan context, I argue instead for an approach that highlights the technopolitical continuities between colonial modernization, the nationalist, developmentalist state, and the neoliberal present.[54] It is not only that contemporary megaprojects and slum removal efforts in Morocco build upon Protectorate-era urban strategies and conceptions, it is that the conflicts and tensions they engender stem in part from the afterlives of colonial projects as well as from more recent shifts in the global political economic order. In other words, the history of late colonialism needs to be read back into the history of late capitalism. None of this is to suggest that the contemporary neoliberal moment in Morocco was in any sense a natural or inevitable result of colonial and postcolonial responses to urban crisis. Neoliberalism in Morocco could not flourish to the extent it has, however, without grafting onto

[53] Stephen J. Collier, *Post-Soviet Social: Neoliberalism, Social Modernity, Biopolitics* (Princeton; Oxford: Princeton University Press, 2011), 9-12.
[54] Cf. Collier's discussion of how certain socialist values, embedded within the infrastructures of mid-sized Soviet cities, constituted an obstacle and a determining factor in the programs of market-oriented reformists of the 1990s in Russia. Collier, *Post-Soviet Social.*

the practices, structures, and infrastructures of the Protectorate.

My aim is not to suggest that present-day practices of urban renewal in Morocco are somehow neocolonial. The point is not just to trouble the temporal arc neoliberalism's rise, but also to call into question its essential *placelessness*. When historical accounts approach neoliberalism as a set of concepts and practices that originated in departmental offices at the University of Chicago or conference rooms of the World Bank and *then* spread outward, by force, to reshape political economies and social contracts in Latin America, postcolonial Africa, the Middle East, Europe, and South Asia, they overlook a fundamental question. That is, how the architectures and infrastructures left behind by colonial modernization projects already worked— by design and by accident— to render certain categories of subjects and citizens precarious by limiting and channeling their capacity to reshape the urban environment. What was distinct about these colonial techniques and conceptions, what made them effective and long lasting, was how they allowed elites, officials, and experts to manage conflict within the urban order by *reallocating technological agency* among different groups of actors. These reallocations, moreover, were not about restricting the abilities of most Moroccan residents to shape their worlds through technology in any simplistic fashion. Instead the "crisis technologies" that I discuss in this dissertation were about regulating how and under what conditions local forms of skill and labor could be brought into the project of "modernization."

What exactly did "modernization" entail in the postwar period? To answer this question, I have sought to bring an STS attunement to expertise and materiality to bear on discussions of colonial political economy and its divisions between intellectual and manual labor. In early twentieth-century Morocco, the *muʿallim*—a skilled Moroccan craftsman—was the figure against whom French architects, engineers, and others positioned their own interventions into the urban

environment. For French commentators, *muʿallimūn* signified the prior unity of manual and intellectual labor. And yet, the aim of colonial officials in Morocco was not to render *muʿallimūn* obsolete but rather to capture and redirect their skills toward the "modernization" of the construction industry in the Protectorate. "Modernization"—as I will emphasize throughout this dissertation—did not correspond to the rationalization, standardization, or homogenization of the building process. It was not a flattening of the world to render it more legible.[55] Modernization was instead the process of cultivating spaces of limited excess, illegibility, heterogeneity, and neglect—spaces for containing and appropriating the forms of skill the *muʿallim* supposedly embodied. In the definitions and practices of French experts in Morocco—who commonly understood themselves to be working in the tradition of the Protectorate's first Resident General, Hubert Lyautey—"modernization" was always a matter of creating reserves of supposedly non-modern skill and labor that could be tapped and put to the service of the colonial project.

Asserting that construction technologies were *made Moroccan* also inverts a key colonial narrative about the country's presumed entrance into modernity. Namely, French witnesses described how peasants, tribal members, and the forms of knowledge they brought with them were transformed by an encounter with capitalist modernization in the city (Casablanca is typically the model in such accounts). Observers imagined that the homogenizing and disenchanting features of this capitalist modernization rewrote the material and symbolic worlds of new city dwellers. Numerous scholars have demonstrated how the urban and social policies created under Lyautey were designed to manage this supposed transition.[56] There remains a risk,

[55] Cf. James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998).
[56] Daniel Rivet, *Lyautey et l'institution du Protectorat français au Maroc, 1912-1925*, 3 vols. (Paris: L'Harmattan, 1998); Paul Rabinow, "Governing Morocco: Modernity and Difference," *International Journal of Urban and Regional Research* 13, no. 1 (1989): 32–46.

however, of imputing far too much efficacy to modernist fantasies. As regards colonial capitalism, its genius lay less in submitting all Moroccans to identical forms of work-discipline than in giving rise to new forms of extraction that became embedded *within* Moroccan social worlds as well as, of course, in finding ways to exploit the racialized differences of the colonial system. Once modernization is understood as a heterogenous set of projects that not only tolerated but depended upon Moroccan labor, skills, and environments, rural migrants appear as actors with the capacity to shape the direction and outcomes of these projects.

According to their explicit criteria, most colonial modernization schemes failed, but their failures still informed the ways in which postcolonial officials and residents envisioned the good life. Full housing, full employment, and home ownership for all—these aims remained central to the imaginaries of planners and the demands non-elite Moroccans throughout the first decades of independence and beyond. It is arguably only in the most recent phase "roll-out" neoliberalism that new "class-projects" have even begun to chip away at underlying arguments behind these forms of claims-making.[57] It is not in spite of, but because of their failures that modernization projects, in their colonial and postcolonial, nationalist incarnations, continue to offer such powerful frameworks for the everyday demands and desires of so many people in Morocco. The infrastructures and the materialities that these projects left behind—whether they crack, collapse, deteriorate, or decay—provide a point of reference, a vehicle, and a pathway for articulating notions of the good life. Borrowing a metaphor from the seismologists who studied the Agadir earthquake, this project is in essence an attempt to follow the concentric circles of damage and desire that ripple out like isoseismal lines from the epicenters of colonial and postcolonial failures.

[57] Bogaert, *Globalized Authoritarianism,* 18-19; 54-58.

A central claim of this dissertation is that colonial and postcolonial modernization projects were to a large extent *designed* to fail. Had French experts truly been able to master and manage the colonial city they would have confronted a host of new obligations and responsibilities for which they were epistemologically and financially unequipped. "French modern" may have existed as a kind of regulatory ideal, but colonial officials recognized that it was often ill-suited to the daily demands of governance.[58] Instead, a dual logic guided colonial modernization schemes in Morocco. On the one hand, a boldly articulated vision for the gradual improvement of the country through hygienic, infrastructural, and scientific endeavors coupled with a paternalistic approach to preserving Moroccan culture—a vision most commonly associated with Lyautey's legacy. On the other, a sometimes tacit, sometimes explicit acknowledgment that the fruits of modernity—access to hygienic infrastructures, stable housing, regular employment—could not and should not extend to all. There were always kernels of austerity in the grand visions of the Protectorate's architects—a fact sometimes overlooked in histories of the period. In many cases, these failures were not the result of misreading local environments or social relations or anything recognizable as resistance. Had techno-modernization schemes gone "according to plan" they would have undermined the foundational asymmetries of the colonial system. This point will be obvious to scholars of colonialism—though perhaps less so to historians of science and technology working in Euro-American contexts. A difficult question remains, however. How did colonial "modernization" for all its apparent contradictions, failures, and much critiqued inequities continue to constitute such a powerful, indeed nearly inescapable framework not only for postcolonial officials but also for postcolonial publics? This question leads to other lines of inquiry, about the stakes, nature, and

[58] Rabinow, *French Modern.*

sources of decolonization.

Sources and Methods of Decolonization

There is longstanding debate in the historiography of colonial North Africa about how to use the mostly French language sources of the colonial archive, broadly defined. Studies of colonial anthropology, for instance, have examined the entanglement of ethnographic knowledge and state power in French writings about North Africans—accounts that revealed the aims and anxieties of colonial governance.[59] Part of the issue stems from how language itself—whether French, Arabic, or Tamazight—became an intensely charged form of symbolic capital during the creation of what Jonathan Wyrtzen, adopting Bourdieu's terminology, refers to as the "colonial political field"—a set of commonly held rules and positions where "notions about and relationships among politics and identity formation were fundamentally transformed."[60] Just as the "colonial political field" rendered linguistic identity a central pole for political praxis in Morocco, scholarship on the Protectorate has also tended to equate a source's language of expression with its proximity or distance to the exercise of colonial power.

The "problem" with reading certain types of French language sources produced about Morocco during the Protectorate—whether these are read against or along the archival grain—is often presented in terms of misrecognition.[61] I take as a given that documents produced within the Protectorate's local and centralized bureaucracies misrepresent fundamental aspects of the

[59] Edmund Burke III, *The Ethnographic State: France and the Invention of Moroccan Islam* (Berkeley: University of California Press, 2014); For a comparative example from the Spanish Protectorate see Josep Lluís Mateo Dieste and José Luis Villanova, "The Interventores of the Spanish Protectorate in Morocco," *Cahiers d'études africaines* 211, no. 3 (2013): 595–624; On the Algerian case see George R. Trumbull IV, *An Empire of Facts: Colonial Power, Cultural Knowledge, and Islam in Algeria, 1870-1914* (Cambridge: Cambridge University Press, 2009).
[60] Jonathan Wyrtzen, *Making Morocco: Colonial Intervention and the Politics of Identity* (Ithaca: Cornell University Press, 2016), 5.
[61] Ann Laura Stoler, "Colonial Archives and the Arts of Governance: On the Content in the Form," in *Refiguring the Archive* (Dordrecht: Springer, 2002), 83–102; Ann Laura Stoler, *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense* (Princeton: Princeton University Press, 2008).

daily lives of Morocco's local communities. I remain uncomfortable though with any easy distinction between "colonial" and "local" sources—in part because of the ways that this division mimics the work of French officials in the Protectorate to firmly demarcate *their* civilizing mission from the products of "local culture." Part of the problem stems from the notion of *representation* itself—more specifically the assumption that colonial documents are ever *mere* representations as opposed to socio-political and material artifacts produced by multiple scales of circulation and types of labor. Some critiques of using "colonial sources," unconsciously import liberal notions of a subject that can be either encumbered by or free of biases, assuming the individual authorship of documents that are produced in complex institutional settings. Even when the origins of colonial representations are problematized, the question remains whether "representation" is indeed a productive way of framing the textual traces of the archive.[62]

While French officials in Morocco, may have exercised at certain moments a near exclusive right to *represent* urban modernization projects—the labor, skills, and knowledges of Moroccans were fundamentally imbricated with all such projects. Approaching colonial architecture, for example, as a set of representations crafted by French designers has the consequence of rendering the participation of Moroccan workers in the production of this architecture illegible—a problem that present-day heritage organizations like the Casamémoire Association have been working to rectify for years. At the same time, attempting to trace and theorize the presence of Moroccan forms of technological labor within colonial constructions forecloses other interpretative possibilities. Once representations are no longer the focus, there is no straightforward method available for clearly disentangling what was "local" from what was

[62] Stoler's suggestion that the archive shows "how practices were historically congealed into events and made into things" is a helpful corrective here. Stoler, "Colonial Archives and the Arts of Governance: On the Content in the Form," 83–102.

"colonial" in, for instance, a one-story, 8x8m cinder-block home in the Hay Mohammadi neighborhood of Casablanca. How can power and exploitation be accounted for in such a reading? The same issues extend to textual sources. While "authored" by colonial officials, documentary records of modernization projects were inscribed, albeit asymmetrically, with the agencies of actors outside of the institutions where these sources were produced. I therefore treat archival records as analytically equivalent to concrete constructions in that both constitute material traces. To be material means to be the product of a process of circulation that exposed these traces to the contradictory projects and programs of different sets of historical actors.[63]

A related, but more profound criticism of using colonial sources to write histories of places like Morocco is that such a move effectively perpetuates the silencing of other epistemological traditions—subjugated knowledges that offer alternative modes of reasoning and world making.[64] This is a very real danger. But this danger is accentuated by ignoring how actors who participated in colonial projects engaged in radically different ways with the forms of skill and knowledge they encountered.[65] In Morocco, the technological know-how of Moroccans was not eradicated but put to work by engineers—subjugated yes, but also woven into the very fabric of modernization projects. At times colonial actors undoubtedly "silenced" Moroccans, but at others they attempted to amplify and make use of Moroccan perspectives and approaches in ways that were at least as troubling, damaging, and essential for the perpetuation of colonial

[63] I draw here on Matthew Hull's discussions of how the material qualities of paper bureaucracy open documents up to additional forms of mediation. Matthew Hull, *Government of Paper: The Materiality of Bureaucracy in Urban Pakistan* (Berkeley: University of California Press, 2012).

[64] The notion of "subjugated knowledges" as alternative regimes of truth that have been confined, in some cases literally, by dominant forms of knowledge was developed by Michel Foucault and expanded by Patricia Hill Collins. Patricia Hill Collins, *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment* (New York: Routledge, 2008); Michel Foucault, *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977*, ed. Colin Gordon (New York: Vintage, 1980).

[65] Following Gayatri Spivak, this project maintains that attending to technology and the various actors who *stabilize* it is one way to "undo the often unexamined opposition between colonizer and colonized…." Gayatri Chakravorty Spivak, *A Critique of Postcolonial Reason: Toward a History of the Vanishing Present* (Cambridge, Mass.: Harvard University Press, 1999), 46.

projects—perhaps especially after the legal process of decolonization.

This dissertation will suggest that one of the most lasting foundations of colonial racism resides not in a particular vision of Morocco or Moroccans, but rather in a notion of French/European/Western technical prowess that has proven impossible to dislodge despite anticolonial critiques. This notion remains difficult to disrupt due in part to the ways it was built into the urban environment itself. Today technologies designed with contextually specific political aims in mind no longer appear "colonial" but have come to form the unquestioned, *concrete* background of the present. The question then is what it would mean to decolonize these material traces and by extension to decolonize crisis. In this approach, the "thing" to be decolonized is neither a place nor a set of subjectivities, neither the "global south" nor the "global north," but rather a collection of technoscientific practices that have produced a single, hybrid and asymmetrical world.[66]

One version of this project in recent scholarship has been based on a reinvestment in local ways of knowing and non-Western technologies and epistemologies vis-a-vis Eurocentric understandings of science and technology.[67] While I have found these approaches compelling and empirically rich in many cases, I have also been struck by how discussions of "local knowledge" tend to reify and to extricate the "local" from supposedly "non-local" practices. As with "representation," the problem here lies with the concept of "knowledge" itself, when it is

[66] In reflecting on decolonization in Morocco, I am indebted to early theorists of decolonization, to the originators of postcolonial theory, and to the growing field of postcolonial science studies. Fanon Frantz, *The Wretched of the Earth*, trans. Richard Philcox (New York: Grove Press, 2004); Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference* (Princeton: Princeton University Press, 2008); Sandra G Harding, *Sciences from below: Feminisms, Postcolonialities, and Modernities* (Durham: Duke University Press, 2008); Kim Fortun, "From Latour to Late Industrialism," *HAU: Journal of Ethnographic Theory* 4, no. 1 (June 23, 2014): 309–29; Warwick Anderson, "Postcolonial Technoscience," *Social Studies of Science* 32, no. 4 (2002): 643–58; Ruha Benjamin, *Race After Technology: Abolitionist Tools for the New Jim Code*, (Medford, Mass.: Polity, 2019).

[67] See in particular contributions to Clapperton Chakanetsa Mavhunga, ed., *What Do Science, Technology, and Innovation Mean from Africa?* (Cambridge, Mass.: MIT Press, 2017).

treated as a kind of resource or pre-existing body of work that can be put to use, rather than an ongoing process of coordinating actions and beliefs.[68] This concept of knowledge as resource was also central to colonial and postcolonial experts who imagined "local knowledge" as something that could be tapped, exploited, and used to legitimate certain strategies of rule. Before and after Morocco's independence, the work of French architects and engineers to valorize the "local knowledge" of Moroccan builders paved the way for new forms of extraction and new technologies of surveillance all while justifying the systematic neglect of the actual demands and desires of communities for greater access to basic infrastructures. In such a context, decolonization cannot mean a simple return to an always necessarily reductive understanding of the "local."

Though I consider in chapters three, four, and five what "decolonization" meant to different groups of actors in Morocco, historical definitions of decolonization that restrict it to moment in time or a single domain are not the primary focus here. Decolonization in this project is neither an actor nor an analytic category but rather a horizon of possibility. Not a return, but the potential for the creation of something new—a "paradigm shift" that could displace even most fine-grained technologies of urban construction.[69] There are moments in this dissertation where Moroccans sketched the contours of this sort of shift—Casablanca's urban insurgents who armed themselves with cinder blocks in acts of anticolonial protest or the leftist critics of Agadir's reconstruction who saw in concrete a collusion between neocolonialism and the postcolonial politics of return. Even today—as the space for interventions that question the benefits of techno-modernization in Morocco has narrowed—popular protest movements

[68] Peter Galison, "Trading Zone: Coordinating Action and Belief (1998 abridgment)" in *The Science Studies Reader*, ed. Mario Biagioli, 137-160 (New York: Routledge, 1999).
[69] Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970), 66.

manage at times to sidestep nationalist frameworks centered around identity in order to demand access to basic infrastructures and call for a redistribution of resources at a systemic level.

More practically, the sources for this project come from approximately eighteen months of archival and oral research conducted in France and Morocco. I relied to a large extent on state records in French and to a lesser extent in Arabic from the colonial and postcolonial period. I collected these materials primarily at the French Diplomatic Archives in Nantes and the National Archives in Rabat. I also consulted records at the French National Library, the Moroccan National Library, the Scientific Institute in Rabat, the Library of the Moroccan Ministry of Housing and Urban Politics, the Archives of Twentieth-Century Architecture in Paris, the Service Historique de la Défense in Vincennes, the Library of the Casamémoire Association, materials complied by the Forum Izorane N'Agadir, and the Library of the King Abdul-Aziz Al Saoud Foundation for Islamic Studies and Social Sciences in Casablanca. I gathered a great deal of published material including newspapers and technical journals from the founding of the Protectorate to the mid-1970s. I also conducted interviews and oral histories with long-term residents of Casablanca and Agadir, former Moroccan officials, architects, and former cement plant workers.

Structure of the Dissertation

Following a brief discussion of precolonial Moroccan urbanism, chapter one considers how crisis and concrete—a concept and a construction technology—became intertwined during the first decades of the French Protectorate. I argue that "crisis" was in this early period a way for communities of urban experts to ward off challenges to their authority from other segments of colonial society and that concrete served as a means of stabilizing a set of sociotechnical relations between different categories of city-dwellers, workers, technicians, and officials. Yet

concrete—a complex technopolitical object inscribed not only with the designs of colonial engineers but also with the labor and skills of Moroccan workers and the uncertainties of Moroccan environments—also introduced forms of instability into the early Protectorate's urban modernization projects. This chapter also examines how Moroccan residents, primarily of middle class and elite backgrounds, contested colonial policies for distributing resources in Casablanca—organizing in ways that challenged French approaches to managing the city through crisis. These contestations revolved around the management and maintenance of mosques and rental practices on land held as part of religious endowments or *ḥubus*. They drew implicitly on precolonial norms for distributing urban resources—articulating an ethics of piety and repair as well as nascent nationalist arguments to level criticism against the colonial state.

Chapter two is concerned with anti-colonial unrest, debates about housing and built infrastructure, and systems for rationing scarce materials in Casablanca during the 1940s and 1950s. Focusing on one particular construction material, I argue that the distribution of cement within institutions, infrastructures, and housing projects embedded practices of neglect and clientism into Casablanca's urban environment. At the same time, cement's presence within black markets, informal housing, and urban protests transgressed the boundaries that Protectorate officials attempted to erect—disrupting colonial policies and categories. Following the flow of cement from concrete pipes and collapsed homes into the cinder blocks thrown by protesters during the 1952 uprising in Casablanca, this chapter considers how attending to the materials of urban construction offers insight into the links between "fast" and "slow" forms of colonial violence in the postwar period.

Overlapping chronologically with the previous chapter, chapter three analyzes new construction methods, housing finance strategies, and forms of worksite organization after WWII

and into the process of decolonization. New crisis technologies such as prefabrication, state-backed, low-income mortgages, and housing cooperatives allowed colonial officials to navigate the end of French rule by imagining alternative political futures for urban Morocco. I argue that these different approaches to managing Morocco's urban crisis endeavored to create entrepreneurial and indebted subjects with new technical and financial dependencies on state experts and Muslim urban elites. Crisis technologies that spanned the period of decolonization also aimed to harness forms of dwelling, knowledge, and labor that Protectorate planners and engineers had previously considered threatening.

Chapter four draws upon scientific and engineering reports, archival material from postcolonial survivors' organizations, and a series of oral histories carried out with survivors and former officials who lived through the city of Agadir's reconstruction after an earthquake in 1960.[70] This chapter considers how postcolonial planners and engineers adapted crisis technologies such as cinder blocks and housing cooperatives to fit the imperatives of disaster response. It first examines how international teams of experts fashioned a notion of "seismic risk" out of data from seismographs, isoseismal maps, witness accounts, geological studies, and direct observations of destruction following the 1960 earthquake. Rewriting Agadir as a seismically vulnerable space and connecting the city to other sites through a global conceptualization of seismic susceptibility, these experts adjudicated between various interpretations of earthquake causality—sometimes separating, sometimes subtly combining the human, the natural, and the technological. The earthquake not only enabled unprecedented levels of direct administrative oversight but also provided an opportunity for recasting the relationship

[70] Chapter four is based in part on an article I published in 2017. Daniel Williford, "Seismic Politics: Risk and Reconstruction after the 1960 Earthquake in Agadir, Morocco," *Technology and Culture* 58, no. 4 (2017): 982–1016.

between experts—especially foreign ones—and the postcolonial state in Morocco. At the same time, the chapter attempts to tease out the lived experience of recovery and rebuilding for survivors and others enrolled in the reconstruction effort.

The fifth and final chapter connects transnational arguments about conservation and pollution in the 1970s to a renewed interest among Moroccan architects and engineers in local construction methods and materials as "environmentally appropriate" solutions to the problem of low-cost housing. Rural renovation campaigns such as the one in the Draa Valley became test sites for aligning late colonial crisis technologies with new practices of "sustainable development" in a context of expanding state networks of surveillance and security in the run up to the "years of lead" under Hassan II. As part of this process, the Centre d'expérimentation, des recherches et de formation (CERF) sought to systematize local knowledge about construction in Morocco with the aim of remaking both urban and rural landscapes. This chapter's conclusion will reflect on the limits of environmental framings of Morocco's urban problems. The conclusion that follows will consider how the materiality of the built world remains central to conflicts over urban knowledge and authority in the present era of neoliberal megaprojects and continued slum removal.

CHAPTER 1

CRISIS AND CONCRETE IN THE EARLY PROTECTORATE

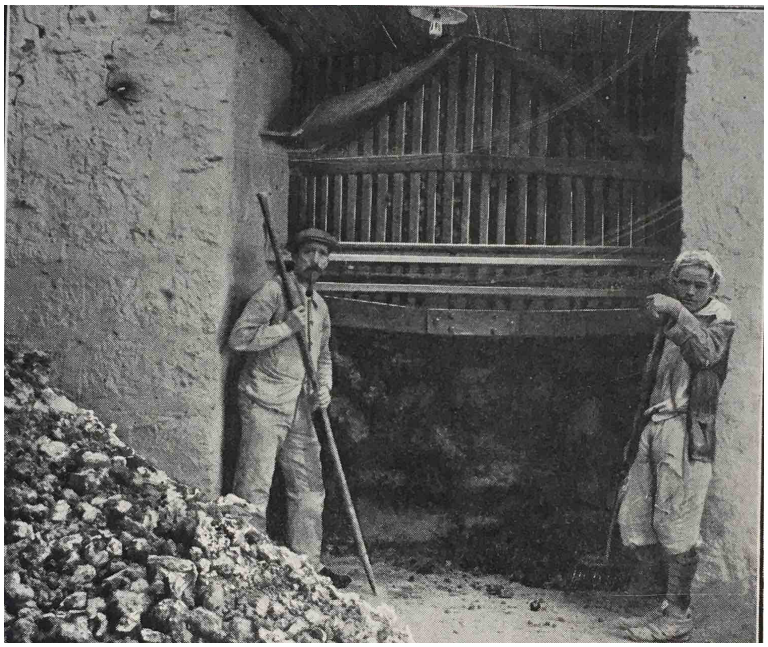

Figure 1: CCM Plant, Casablanca, 1916, "Vu du bas du four montrant l'extraction," in Charles Dantin, "Fabrique de ciment et de chaux hydraulique à Casablanca (Maroc)," *Le génie civil* 8 (April 29, 1916): 1–16.

Les travaux de démolition au derb Ben Djedia se poursuivent activement

Figure 2: Derb Ben Djedia, Casablanca, 1939, "Le problème du recasement: Trois cités indigènes seront créés à Casablanca, Elles permettront de loger dans d'excellentes conditions d'hygiène et de confort près de quinze mille habitants,"*Le petit marocain*, February 27, 1939 in E0831, AM.

Two images—scenes of opposing but intimately related laborscapes in colonial Casablanca—frame this chapter. The first, from 1916, shows a European and a Moroccan laborer standing across from one another at the bottom of the shaft kiln of Casablanca's only cement plant.[71] Originally featured in an engineering journal alongside diagrams and schematics, the photograph is striking in its raw simplicity. Rather than directly showcasing the plant's technical prowess, the scene was meant to underscore the fact that only a few *unskilled* laborers were necessary at this phase of the production process. The suggestion that European and Moroccan workers could be used interchangeably and that industrial cement—the essential ingredient for mixing concrete to build modern ports, bridges, and buildings—could be manufactured under such relatively *low tech* conditions was a key argument among colonial engineers for the plant's importance to France's colonial venture in Morocco. The second photograph appeared in a French language newspaper in 1939, at the height of the first large scale demolition campaigns in

[71] "Vu du bas du four montrant l'extraction," in Charles Dantin, "Fabrique de ciment et de chaux hydraulique à Casablanca (Maroc)," *Le génie civil* 8 (April 29, 1916): 1–16.

the city's history.[72] In it, residents of Derb Ben Djedia, a settlement of around three thousand six hundred in Casablanca, dismantle homes targeted for demolition by the municipality.[73] Many of the structures taken apart during these campaigns were composed of "light" materials, discarded sheet metal or wood. The partially destroyed white wall to the right, however, belongs to a house built *en dur,* from permanent materials. It is ambiguous from a distance whether this wall was constructed using concrete or simply stone masonry (this ambiguity is itself significant). Concrete is an absent presence in both images.

During the twenty-year period separating the photographs, Casablanca had grown rapidly, from 56,000 residents in 1913 to nearly 300,000 by 1936.[74] In the process, the city's urban environment had been transformed as much by the unintended consequences of concrete construction as by the ambitious designs of colonial urbanists. This transformation was accompanied by an ever-expanding notion of "crisis"—a term that French commentators deployed liberally to describe a diverse range of conditions afflicting the colonial city. Officials cast interventions like the demolitions in Derb Ben Djedia as responses to crisis—attempts to contain public health concerns while assuaging opposition to colonial rule on the part of the city's increasing mobilized Muslim residents. As a concept, "crisis" came during this twenty-year period to encompass both the on-the-ground material conditions of urban life and the responses of Casablanca's inhabitants to those conditions.

Following a brief discussion of precolonial Moroccan urbanism, this chapter considers how crisis and concrete—a concept and a construction technology—became intertwined during

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[72] Demeure, "Le problème du recasement: Trois cités indigènes seront créés à Casablanca, Elles permettront de loger dans d'excellentes conditions d'hygiène et de confort près de quinze mille habitants,"*Le petit marocain,* February 27, 1939 in E0831, AM.
[73] Contrôleur Civil, Chef de la Région de Casablanca to Ministre Plénipotentiaire, "Répercussion sur l'état d'esprit des indigènes de Casablanca, de l'évacuation des derbs insalubres," August 25, 1938, E0831, AM.
[74] Paul Puschmann, *Casablanca: A Demographic Miracle on Moroccan Soil?* (Leuven; Den Haag: ACCO, 2011), 72.

the first decades of the French Protectorate while generating forms of contestation. I argue that "crisis" was in this early period a way for communities of urban experts to ward off challenges to their authority from other segments of colonial society and that concrete served as a means of stabilizing a set of sociotechnical relations between different categories of city-dwellers, workers, technicians, and officials. Yet concrete—a complex technopolitical object inscribed not only with the designs of colonial engineers but also with the labor and skills of Moroccan workers and the uncertainties of Moroccan environments—also introduced fundamental forms of instability into the Protectorate's urban modernization projects. This chapter also examines how Moroccan residents, primarily of middle class and elite backgrounds, contested colonial policies for distributing resources in Casablanca—organizing in ways that challenged French approaches to managing the city through crisis. These contestations revolved around the management and maintenance of mosques and rental practices on land held as part of religious endowments or *ḥubus.* They drew implicitly on precolonial norms for distributing urban resources—articulating an ethics of piety and repair—as well as nascent nationalist arguments to level criticism against the colonial state.

Urban and architectural historians have discussed concrete's role in colonial town planning but have focused on its importance as a medium for Casablanca's Neo-Moroccan architecture.[75] In contrast, this chapter follows the technical debates, industrial systems, and popular conflicts that concrete engendered during and after Hubert Lyautey's ambitious tenure as the first Resident General of Morocco. Lyautey, his chief urbanist Henri Prost, and his director of

[75] Jean-Louis Cohen and Monique Eleb, *Casablanca: Colonial Myths and Architectural Ventures* (New York: The Monacelli Press, 2002); Hassan Radoine, "French Territoriality and Urbanism: General Lyautey and Architect Prost in Morocco (1912-1925)," in *Colonial Architecture and Urbanism in Africa*, ed. Fassil Demissie (New York: Routledge, 2012), 11–31; Gwendolyn Wright, *The Politics of Design in French Colonial Urbanism* (Chicago: University of Chicago Press, 1991).

Arts Indigènes, Prosper Ricard, were each fascinated with preserving and promoting Moroccan architectural and craft production.[76] This fascination extended to the "authentic" local materials used in "traditional" forms of masonry, tilework, and carpentry. Given the primacy of preservation during the early Protectorate, the point of centering concrete construction is not simply to assert, as others have, that a dual system of preservation and modernization existed. Instead, I suggest that making "modern" concrete structures relied upon making concrete *Moroccan*. This process was the result of engineering practices for containing and redeploying the skills Moroccan workers and the indeterminacies of Moroccan environments—forms of technological labor and material excess that undermined the dichotomy between modernity and tradition.[77]

My focus then is not colonial architecture or urban planning as such but rather the politics of matter that undergirded both. This politics involved arranging and allocating technological labor and agency to different categories of residents within the colonial city. Debates about concrete—about what happened to concrete in the process of becoming Moroccan—were by no means merely technical. Concrete lay at the center of a vibrant "sociotechnical imaginary" for colonial modernization projects—visions of a hygienic colonial city with harmonious relations between European and Moroccan workers, experts, and residents.[78] This vision, and its failure to

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[76] For studies of colonial arts education involving Prosper in particular see Hamid Irbouh, *Art in the Service of Colonialism: French Art Education in Morocco 1912-1956.* (London: I.B. Tauris, 2013); James Mokhiber, "'Le Protectorat dans la peau': Prosper Ricard and the Native Arts' in French Colonial Morocco, 1899-1952," in *Revisiting the Colonial Past in Morocco*, ed. Driss Maghraoui (London: Routledge, 2013), 257–84; Ashley V. Miller, "Making Moroccan 'Heritage': Art, Identity, and Historical Memory in the Early French Protectorate of Morocco (ca. 1912 - 1931)" (Ph.D., Ann Arbor, University of Michigan, 2017); Stacy E. Holden, *The Politics of Food in Modern Morocco* (Gainesville: University Press of Florida, 2009), 102-105.

[77] By engineering practices, I mean work with technologies like cement kilns, regulatory strategies, and rhetorical efforts to define and demarcate "crisis."

[78] Sheila Jasanoff and Sang-Hyun Kim define "sociotechnical imaginaries as "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology." Jasanoff, "Future Imperfect: Science, Technology, and the Imaginations of Modernity," in *Dreamscapes of Modernity : Sociotechnical Imaginaries and the Fabrication of Power,* eds. Sheila Jasanoff and Sang-Hyun Kim (Chicago: The

materialize, was also inextricably linked to notions of Casablanca's perpetual urban crisis. Before elaborating these arguments, however, it is first necessary to offer a partial view onto the shifting nature of precolonial urban society and the ways that the early French Protectorate drew upon and transformed already existing strategies of urban governance by elaborating a new politics of matter.

A Brief History of the Early Protectorate

Precolonial Moroccan cities were not the static, ossified urban centers often imagined by French colonial writers. The eighteenth and nineteenth centuries witnessed the emergence and development of new urban forms in coastal towns and the interior. Old urban centers like Fez and Marrakesh and newer ones such as Essaouira underwent profound levels of social change as a result of state-building processes pushed forward by the *makhzan,* the governing apparatus surrounding the Sultan*,* as well as by European capitalist penetration.[79] Most scholars of precolonial Morocco have suggested that the social and economic transformation of the country was a gradual process, guided as much by internal dynamics as by integration into the world economy.[80] Urban areas, the focus of much scholarly attention, also remained somewhat marginal in a world where rural politics and revenue still predominated.

Moroccan cities in the nineteenth century were not simply exemplars of an abstract model for the "Islamic city."[81] Precolonial urbanism dynamically adapted to changing political

University of Chicago Press, 2015), 4.

[79] Daniel Schroeter, *Merchants of Essaouira: Urban Society and Imperialism in Southwestern Morocco, 1844-1886* (Cambridge; New York: Cambridge University Press, 1988), 2.

[80] The practice of gauging Morocco's transformation in the 19th century in terms of two categories, internal dynamics/reform and European commercial influence/aggression has been the norm since Edmund Burke III's path breaking work on the period prior to the French invasion and founding of the Protectorate. Edmund Burke III, *Prelude to Protectorate in Morocco: Precolonial Protest and Resistance, 1860-1912* (Chicago: University of Chicago Press, 1976), xii; See also Schroeter, *Merchants of Essaouira*, 5; And more recently Susan Gilson Miller, *A History of Modern Morocco* (Cambridge: Cambridge University Press, 2013).

[81] Debates about the nature and the existence of an "Islamic city" began with Orientalist writers such as Roger Le

situations, migrations, and external pressures. The management of religious and ethnic difference through spatial separation was a central feature of cities in most of the Muslim Mediterranean. The "minority quarter"—in Morocco typically the *mallah,* the walled-off Jewish section of the city—was one example, but neighborhoods were also divided according to geographic origin and sometimes tribal or kin affiliation.[82] The *darb,* or neighborhood, often centered around residents belonging to a single saintly lineage or a particular region, was a basic organizing unit for urban social life.[83] Enslaved black soldiers, ʿAbīd al-Bukhārī, were typically housed in separate areas of the city and free blacks sometimes inhabited their own quarters as well.[84] The strict demarcation of difference in urban space, however, was not an ahistorical principle but rather a fluctuating characteristic of Moroccan cities. At times, minority quarters were sites for the emergence of hybrid socialities and transgressive behaviors.[85] Often Jewish Moroccans, for

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Tourneau and Louis Massignon who suggested that Islamic cities possessed no real coherent urban structure—treating them largely as foils to oppose against the development of cities in Medieval Europe. These writers were followed by a generation of historians including Ira Lapidus, Albert Hourani, and André Raymond who challenged certain Orientalist tropes and sought to investigate and describe the complex social structures that gave shape to the Islamic city. In response to these comprehensive visions of how law and social structure shaped Islamic urbanism, scholars such as Dale Eikelman and Janet Abu-Lughod began to question whether in fact the "Islamic city" could serve as a cohesive, meaningful category at all. Others such as Besim Hakim endeavored to show how particular principles of Islamic jurisprudence translated into a system of urban regulation. Besim S. Hakim, "Law and the City" in *The City in the Islamic World*, eds. Salma Khadra Jayyusi et al., 71-92 (Leiden; Boston: Brill, 2008); Janet L. Abu-Lughod, "The Islamic City: Historic Myth, Islamic Essence, and Contemporary Relevance," *International Journal of Middle East Studies* 19, no. 2 (1987): 155–76; André Raymond, *The Great Arab Cities in the 16th-18th Centuries: An Introduction* (New York: New York University Press, 1984); Ira M. Lapidus, *Muslim Cities in the Later Middle Ages* (Cambridge, Mass.: Harvard University Press, 1967); Dale F. Eickelman, "Is There an Islamic City? The Making of a Quarter in a Moroccan Town," *International Journal of Middle East Studies* 5, no. 3 (1974): 274–94; André Raymond, "Islamic City, Arab City: Orientalist Myths and Recent Views," *British Journal of Middle Eastern Studies* 21, no. 1 (1994): 3–18.

[82] Susan Gilson Miller et al., eds., *The Architecture and Memory of the Minority Quarter in the Muslim Mediterranean City* (Cambridge, Mass.: Harvard University Graduate School of Design, 2010).

[83] Dale Eikelman has discussed the significance of the *darb* and the importance of *qraba* (closeness) among its residents for creating a kind of residential association with deep historical roots in Morocco. Dale F. Eickelman, "Is There an Islamic City?" 274–94.

[84] Chouki El Hamel, *Black Morocco: A History of Slavery, Race, and Islam* (Cambridge; New York: Cambridge University Press, 2013), 97-98; Lean Brown, "Color in Northern Africa," *Daedalus* 96, no. 2 (Spring 1967): 469 cited in El Hamel, 98. On slavery in Morocco see also Mohammed Ennaji, *Serving the Master: Slavery and Society in Nineteenth-century Morocco*, trans. Seth Graebner (London: Macmillan Press, 1999). On slavery in a Tunisian context see M'Hamed Oualdi, *Esclaves et maîtres : Les Mamelouks des beys de Tunis du XVIIe siècle aux années 1880* (Paris: Publications de la Sorbonne, 2011).

[85] Miller, "An Introduction to the Mediterranean Minority Quarter," in *The Architecture and Memory of the Minority*

instance, were not explicitly confined to minority quarters. At other moments, such as reign of Mulay Sulayman (1766-1822), Jewish residents in coastal towns were banned from living outside of the *mallah.*[86] Rather than reading precolonial Moroccan cities as spaces of either hybridity or segregation, it is more accurate to consider these as two poles along a historically shifting continuum.[87] The fact remains, however, that precolonial Morocco was a polity in which various forms of difference and affiliation were expressed through the production of urban space.

Urban property in precolonial Morocco was divided into three categories, *mulk* or private property, *amlāk al-makhzan* or land held by the *makhzan,* and religious endowments known as *ḥubus* (*awqaf* outside of Maghrib), which by the end of the nineteenth century were indirectly administered by the Sultan as well.[88] *Makhzan* property had the dual function of generating revenue for Sultan's administration through rent, and in many cases of providing housing for allies, supporters, or representatives. In his study of the partially planned city of Essaouira, Daniel Schroeder discusses how even the most successful Jewish merchants in town continued to live as tenants on *makhzan* property in the *casbah*.[89] These official merchants, who in many cases possessed the exclusive right to trade with Europeans, were also deeply indebted to the Sultan, who extended lines of credit as a means of maintaining tight control over foreign trade. For these official Jewish merchants, the *tujjār as-Sulṭān,* the overlapping roles of debtor, renter, and *dhimmi* embodied a particular form of statecraft. Tenancy and debt—strategies for managing

Quarter in the Muslim Mediterranean City, 13; 28.
[86] Schroeter, *Merchants of Essaouira,* 20.
[87] Jessica Marglin's recent work has demonstrated how law constituted a complex mechanism for allowing Jews to navigate Moroccan society prior to the Protectorate—a mechanism that was eventually undermined by the legal reforms introduced by the French after 1912. Jessica M. Marglin, *Across Legal Lines: Jews and Muslims in Modern Morocco* (New Haven, Conn.: Yale University Press, 2016). On the status of Jews under the French Protectorate see also Jonathan G. Katz, "Conversion, Intermarriage and the Legal Status of Jews in French Protectorate Morocco," *The Journal of North African Studies* 23, no. 4 (August 8, 2018): 648–74.
[88] Schroeter, *Merchants of Essaouira,* 29-30.
[89] Schroeter, *Merchants of Essaouira*, 32.

the movement of people and the movement of capital—were the key vehicles for precolonial authorities attempting to negotiate Morocco's relationship to the world economy while dealing with the realities of internal instability and continuous challenges to the Sultan's authority. In a much later period, French colonial officials in Morocco would draw on a similar set of strategies for provisioning housing while maintaining indebtedness—techniques aimed at containing real estate speculation and the threat of anti-colonial protest alike.

The *makhzan's* own growing indebtedness to European powers during the late-nineteenth century—aggravated by unsuccessful military conflicts with Spain and costly attempts at military reform and centralization—provoked an accelerating series of challenges for the Sultan at the beginning of the twentieth century. In early 1907, the French general Hubert Lyautey crossed the Algerian border into Morocco to seize the eastern city of Oujda in response to the killing of a French doctor, Émile Mauchamp in Marrakesh.[90] That summer, a civil war erupted between supporters of the current Sultan, ʿAbd al-ʿAziz, and his brother, the *khalifa* of Marrakesh, ʿAbd al-Hafiz. At the same time, members of the growing European colony in the small port city of Casablanca were attacked by locals in the Chaoui, prompting an invasion of the city by a French expeditionary force. While ʿAbd al-Hafiz eventually managed to seize power, he was never able to fully reestablish the *makhzan's* authority over the revolting tribes of the Middle Atlas or mount any tangible challenge to France's territorial aggression. After an agreement in 1911 in which Germany abandoned its opposition to a French occupation, ʿAbd al-Hafiz signed the Treaty of Fez establishing a French Protectorate in Morocco with Lyautey as the country's first Resident General.[91]

[90] See Ellen Amster's reading of Mauchamp's death and the rumors surrounding his medical practice as a means of understanding politics and embodiment in precolonial Morocco. Ellen Amster, *Medicine and the Saints: Science, Islam, and the Colonial Encounter in Morocco, 1977-1956* (Austin: University of Texas Press, 2013), 82-109.
[91] For a more detailed account of the events leading up to the establishment of the French Protectorate see Miller, *A*

The first decade of the Protectorate was indelibly marked by Lyautey's idiosyncratic colonial vision for the gradual reform and partial preservation of local society as well as by the continuous resistance of urban and rural Moroccans to French rule. The French military occupation of the country was itself a gradual process, punctuated by moments of temporarily successful revolt such as ʿAbd al-Karim al-Khattabi's rebellion in the Rif from 1921 to 1926. Lyautey, however, appeared to value modernization over military success. A staunch conservative with a profound appreciation for the technological fruits of modernity, he imagined benevolent colonial technocrats at the top of clearly defined social hierarchy. His experiences in Indochina, Madagascar, and Algeria had led Lyautey to formulate a critical stance toward France's previous colonial ventures. In Morocco, he crafted a state structure aimed at propping up the symbolic authority of the old order, protecting local society from the unchecked rapaciousness of settlers and colonial capitalists, and governing through the expansion of infrastructures in rural areas.

Colonial urbanism in Morocco—while shaped by intellectual debates and technical developments in the metropole—was also very much the product of an asymmetrical encounter with the pre-existing built forms and histories of Islamic urbanism in the Mediterranean.[92] Lyautey's vision for colonial urbanism in Morocco has been the focus of in-depth scholarly attention. Daniel Rivet has suggested that at its most basic level, the Resident General's program was centered around three poles: 1) the strict separation of European and indigenous cities, 2) the protection and restoration of the Moroccan *madīna,* and 3) the encouragement of technical and

History of Modern Morocco, 56-87.

[92] For a polyvocal discussion of the Moroccan *madīna,* its many materialities and symbolic resonances, see the contributions to the special issue on "The Walled Arab City in Literature, Architecture and History: The Living Medina in the Maghrib," eds. Susan Gilson Miller and Susan Slyomovics, special issue, *The Journal of North African Studies* 5, no. 4 (December 2000).

aesthetic experimentation in the *ville nouvelle.*[93] The architect and urbanist charged with executing this vision, Henri Prost, had a profound impact on most of Morocco's major cities, especially Casablanca and Rabat with their relatively large European populations.[94] One of Prost's most lasting legacies was the creation of a legal framework for urban planning—embodied in the 1914 *dahir*, which administratively separated new cities from indigenous cities and established a basis for expropriations and a variety of spatial regulations.[95] It was Rabat, the new administrative capital, that served as Prost's main "laboratory," however, not Casablanca with its boom and bust cycle of real estate speculation.[96]

From the chaotic urban interventions that followed the initial French occupation in 1907 to Prost's systematic elaboration of the principles of colonial urbanism at the Congrès international d'urbanisme aux colonies in 1931, an urban order coalesced in colonial Casablanca.[97] Protectorate officials were not simply concerned with managing the bodies of

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[93] Daniel Rivet, *Lyautey et l'institution du Protectorat français au Maroc, 1912-1925*, volume 1 (Paris: L'Harmattan, 1998), 147.

[94] On Prost's urbanism see Hélène Vacher, "Henri Prost and the Moroccan Colonial Experience," *Nordisk Arkitekturforskning* 9, no. 3 (1996), 71; Wright, *The Politics of Design in French Colonial Urbanism*; Radoine, "French Territoriality and Urbanism"; On Prost's hygienic vision and the *cordon sanitaire* see Amster, *Medicine and the Saints,* 113-115; For a comparative case concerning Prost's work in Algiers see Zeynep Çelik, *Urban Forms and Colonial Confrontations: Algiers under French Rule* (Berkeley: University of California Press, 1997); Hugh Pouliot, "Between Medina and the Metropole: Race & Urban Planning from Algiers to Paris (1930-75)" (Masters Thesis, Halifax, Nova Scotia, Dalhouise University, 2011), 30; Justin Mcguinness, "Political Context and Professional Ideologies: French Urban Conservation Planning Transferred to the Médina of Tunis," *The Journal of North African Studies* 2, no. 2 (September 1997): 34–56. For an example of Prost's own writing on urbanism see Henri Prost, "Le développement de l'urbanisme dans le Protectorat du Maroc, de 1914 à 1923," in *L'urbanisme aux colonies et dans les pays tropicaux*, ed. Jean Royer (La Charité-sur-Loire: Delayance, 1932).

[95] Radoine, 21-22. The precise nature of colonial segregation has also been a matter of extensive debate. Paul Rabinow has contested Janet Abu Lughod's description of "urban apartheid" in Rabat and Casablanca, suggesting that patterns of sociability and habitation were far more flexible in these cities than the term implies. Rivet has suggested that a politics of spatial separation was as much a demand of the Muslim urban elite as of colonial officials. As mentioned above, the principle of dividing cities along communal or genealogical lines was also a feature of precolonial urbanism. Abu-Lughod, *Rabat: Urban Apartheid in Morocco*; Rabinow, *French Modern,* 307; Rivet, *Lyautey et l'institution du Protectorat,* volume 1, 157.

[96] Radoine, 20.

[97] For a discussion of the Congrès and its influence see Gaëlle Gillot, "La ville nouvelle coloniale au Maroc: Moderne, salubre, verte, vaste," in *Dire les villes nouvelles*, ed. François Leimdorfer (Paris: Édition de la Maison des sciences de l'homme, 2014), 71–96.

Moroccan residents—as vectors for disease or sources of unrest—but were instead focused on regulating the capacity of colonial subjects to reshape the city itself. This order—the product of zoning laws, municipal ordinances, labor migrations, and real estate machinations—was less a system of spatial segregation, I emphasize, than a form of *technological re-allocation.*[98] I interpret the urban experiments of the French Protectorate not as attempts to restrict the movement of bodies in space, but as strategies for altering the access of different categories of residents to the technologies, forms of skill and knowledge, and materials required to build, demolish, and repair. In this urban order, built structures were primarily identified as "Muslim," "Jewish" (*israélite),* or "European" not only, as some historians have suggested, through architectural forms*,* but also through their material makeup*.* At its core, the definitions of crisis proposed by European experts in the first decades of the Protectorate revolved around questions of whose labor could count as technological—who could be trusted to manage and manipulate materials in the colonial city.

Lyauety's vision of a colonial society led not by politicians—like the settler elite of French Algeria—but by technicians brought a host of architects, planners, and engineers to Morocco's Atlantic coast. Engineers in particular constituted a distinct community whose members followed similar professional pathways, read the same journals, and often shared the experience of military or colonial service. Morocco's Public Works Administration privileged the applications of veterans and also sought out candidates with some abilities in spoken Arabic. Engineers employed by the state applied via a competitive exam and once hired where typically

[98] I follow Diana Wylie's assertion that examining colonial cities in Morocco solely in terms of *segregation* obscures meaningful facets of the colonial urban situation. I maintain, however, that colonial urban environments were indeed *racialized*, but that race was materialized within technologies of urban construction rather than solely through a system of spatial separation. Diana Wylie, "Moroccan Urbanism: A Case Study in Colonial and Post-Colonial Métissage," in *Multicultural Urban Fabric and Types in the South and Eastern Mediterranean*, eds. Maurice Cerasi et al., Beiruter Texte Und Studien 102 (Würzburg: Ergon Verlag in Kommission, 2007), 225–39.

deployed across the territory. While some trained in engineering programs, many others simply rose through the ranks of the Public Works Administration.

The later was the case for individuals like Louis Morère who, in addition to his long career as a site manager, was also an accomplished painter who composed Orientalist scenes of urban and rural life in Morocco. Born in the Haute-Garonne in 1885, Morère began his career in military service, first in Tunisia then in Morocco.[99] From 1914 to 1925, he worked on a succession of public works projects in Mazagan (El Jadida), Azemmour, and eventually Marrakesh. Initially a foreman with no formal engineering degree, he oversaw concrete formwork and pouring for bridges, canals, and housing.[100] His superiors noted, however, that through these projects, Morère had acquired enough "theoretical training" to be recommended for a promotion to the rank of assistant engineer.[101] In Marrakesh, he managed a state-run workshop and warehouse and conducted regular visits to track the progress of construction projects underway in the High Atlas.[102] While on these site visits, Morère painted visions of a timeless, static traditional world in both landscapes and portraits of Moroccan figures—a world that the colonial public works projects he directed were rapidly transforming. A relatively low-ranking individual within the administrative hierarchy of the Protectorate, Morère nonetheless belonged to the class of technicians at the center of Lyautey's vision, and the contradictions of his dual career as a painter and site manager captured the tension between modernization and preservation at the core of Lyautey's project.

Morère's relatively quiet career as a painter and site manager contrasts with the trajectory

[99] Martin, Ingénieur en chef de l'arrondissement de Marrakesh, "Rapport de l'ingénier: Demande de M. Morère Louis conducteur principal," December 28, 1925, E0398, AM.
[100] Direction des travaux public, "Feuille signalétique: Morère Louis," 1925, E0398, AM.
[101] Martin, Ingénieur en chef de l'arrondissement de Marrakesh, "Rapport de l'ingénier: Demande de M. Morère Louis Conducteur Principal," December 28, 1925, E0398, AM.
[102] Charlotte Monto, *Au maroc avec Louis Morère, 1885-1949* (Paris: Somogy Éditions, 1999), 46.

of Édouard Joyant (1872-1954). Trained as an engineer des Ponts et Chaussées—France's civil engineering corps—Joyant served as the assistant director of public works from 1913 to 1919, then as the director from 1928 to 1932.[103] Unlike many Protectorate officials at the time, Joyant expressed a degree of skepticism about the long-term future of the preservationist project in Morocco.[104] As Prost's counterpart in engineering, he produced a series of published works laying out a vision for colonial urbanism from a technical perspective.[105] At a time when the École des Beaux-Arts and the École des Hautes-Études Urbaines in Paris were the only two institutions in the French world providing designated training in urban planning, Joyant lamented the fact that technical schools in France had yet to introduce planning principles into their curricula.[106] He composed his *Traité d'urbanisme* in part to address this gap for colonial engineers, officials, and other technicians.[107] In some respects, Joyant's *Traité* resembled an engineering manual, with mathematical formulas provided to calculate, for example, the necessary width of a traffic circle as a function of the width of the connected streets or the height of the pavement in relation to the amount of circulation on a road.[108] In a context where urbanism continued to be associated with the artistic visions of idiosyncratic planner-architects, Joyant's manual suggested that by diffusing standardized principles and calculations town planning could become the purview of even low-ranking, colonial engineers.

Compared to their colleagues in engineering, architects held a slightly more prestigious

[103] Hélène Vacher, "La planification de la sauvegarde et le détour marocain (1912-1925)," in *Patrimoines en situation. Constructions et usages en différents contextes urbains : exemples marocains, libanais, égyptien et suisse*, ed. Raffaele Cattedra et al., Colloques et Journées d'études (Beirut: Presses de l'Ifpo, 2010); Vacher also refers briefly to Joyant's collaboration with Henri Prost during this period Hélène Vacher, "Henri Prost and the Moroccan Colonial Experience," *Nordisk Arkitekturforskning* 9, no. 3 (1996), 71.
[104] Vacher reports on Joyant's dismissal of the *madīna* of Casablanca in his correspondence, located at the archives of the Musée Social. Vacher, "La planification de la sauvegarde et le détour marocain (1912-1925)," footnote 56.
[105] These include Édouard Joyant, *Traité d'urbanisme*, 2. éd. (Paris: Librairie de l'enseignement technique, L. Eyrolles, 1928); Édouard Joyant, *Les travaux au Maroc pendant la guerre* (Casablanca: G. Mercié & Cie, 1918).
[106] Edouard Joyant, *Traité d'urbanisme*, 2. éd. (Paris: Librairie de l'enseignement technique, L. Eyrolles, 1928), 1-2.
[107] Joyant, *Traité d'urbanisme*, 2.
[108] Joyant, *Traité d'urbanisme,* 36-37; Annex 1, Figures 10 and 11.

position under the Protectorate, especially during its early years. Lyautey himself expressed reservations about handing urban and aesthetic matters over to engineers who were often trained through military schools—selecting architects like Prost from the École des Beaux-Arts instead.[109] There were far fewer architects active in the Protectorate as a whole and they were more concentrated in Casablanca and Rabat.[110] While some, like Auguste and Gustave Perret, only sojourned in Morocco for the duration of a few projects, others, such as Edmond Brion and Marius Boyer, worked in the Protectorate long term.[111] Many were deeply committed to the project of adapting and valorizing local building practices.[112] Auguste Cadet, for instance, who arrived in Morocco in 1918 and established an office in the new *madīna* of Casablanca, devoted his career to the study and adaptation of Islamic architecture in Morocco. Cadet was responsible for some of the most iconic Neo-Moroccan works in the city including (with Brion) the Quartier des Habous and the Mahakma du Pacha. Potentially apocryphal present-day accounts of Cadet's life and work practices describe him dressing in Moroccan garments, eating alongside laborers on his work sites, speaking fluent Arabic, and eventually marrying a Moroccan woman after converting to Islam.[113] While seemingly an exceptional case, the carriers of colonial architects like Cadet have been subject to far more scholarly attention and contemporary interest than the

[109] Paul Rabinow, "Governing Morocco: Modernity and Difference," *International Journal of Urban and Regional Research* 13, no. 1 (1989), 33.
[110] The Association Casamémoire estimates that around 140 architects were active in Casablanca from 1912 to 1960. "Biographies des architectes actifs à Casablanca," November 1, 2016, Centre de ressources documentaires de Casamémoire.
[111] Brion, in addition to his work with Auguste Cadet discussed later in this chapter, would design the worker housing project for the Lafarge cement plant in Casablanca.
[112] Albert Laprade who designed a number of administrative buildings in Rabat and produced studies of Islamic architecture in Morocco is another example. Contract between Albert Laprade and Directeur des travaux public for the Construction of the New Residency Building in Rabat [undated], Laprade 317 AA 1, AAXXS; Albert Laprade, "Les influences possible du Maroc sur l'art français," *Revue France-Maroc* (1917): 37–38, located in Laprade 317 AA 1, AAXXS.
[113] "Biographies des architectes actifs à Casablanca," November 1, 2016, Centre de ressources documentaires de Casamémoire; Casamémoire Guide Book, 108.

supposedly more mundane and anonymous work of colonial engineers.[114] While both professions attempted to present their disciplines as central to France's colonial project, engineers were ultimately more successful at positioning their labor as the technological backbone for the everyday work of modernization. They did so in part by attaching their expertise to a particular set of objects, "crisis" and "concrete," through a process that the following two sections will explore in more detail.

Moroccan workers constituted yet another professional category—the one most intimately involved in the urban construction process. In journalistic accounts, state reports, and many histories of urban Morocco these workers figured as an urban mass—an amorphous but often unruly supply of labor. If architects were the most highly individuated actors in the colonial construction economy, local laborers were the least. Yet archival materials on various public works projects under the Protectorate provide a partial view into the nature of their work. Throughout the 1920s and 1930s, Moroccan laborers in Casablanca's construction industry were likely to be recent migrants to the city. Many came from the Chaouia, the region surrounding Casablanca, while another large contingent arrived from the Sous and the Marrakesh region. Initially rural migrants settled in Casablanca's increasingly dense *madīna,* but as the city's population ballooned from 63,000 in 1912 to 120,000 in 1927, many sought informal housing in the growing *bidonvilles* to the east or in the neighborhood of Derb Gallef.[115]

Moroccan workers in Casablanca were by no means a homogeneous group. While some were recent rural migrants with little experience in the building trades, others belonged to a class of well-established professional artisans known as *muʿallimūn.* The racialized figure of the

[114] This anonymity extends to the colonial archive itself with engineers who frequently neglected to sign reports or contributed anonymous articles to professional journals.
[115] Jean-Louis Cohen and Monique Eleb, *Casablanca: Colonial Myths and Architectural Ventures* (New York: The Monacelli Press, 2002), 90.

muʿallim—an artisan who could be educated into a skilled worker—served an intermediary function within French visions of culturally sensitive modernization.[116] Protectorate officials like Prosper Ricard separated artisans from Moroccan workers in general by introducing protective measures for guilds, while at the same time "urban hygiene regulations contributed to the erosion of the economic viability of Moroccan guilds."[117] Preservationist rhetoric aside, the actual labor of *muʿallimūn* was fundamentally necessary and, at times threatening, to state-sponsored building projects.[118]

The racialized nature of these professional hierarchies—the firm divide between European technicians and Moroccan laborers—was also troubled by the presence of Spanish and Italian workers in colonial cities and on colonial construction sites. Drawn to Casablanca's booming construction economy, migrants from southern European were at times a source of alarm for the French administration, at others a necessary solution to labor shortages. During a meeting of Casablanca's municipal commission in 1919 at the height of the city's housing crisis, members argued that "procuring shelter for Italian and Spanish workers is a relatively simple task, but we must do better for the French by building low-cost housing as soon as possible."[119] The question of housing for Moroccan workers was not even mentioned in the commission's final report. The municipality's variable attitudes toward French, southern European, and

[116] For a parallel discussion of how colonial arts policy enacted a binary opposition between French fine arts and "Moroccan crafts" see Irbouh, *Art in the Service of Colonialism*. Irbouh shows how certain forms of skill and dexterity were effectively racialized by colonial arts education as "craft," a concept that served as a means of transforming Moroccan artisans into skilled workers (15). As Spencer Segalla points out in his study of French educational policy, however, its important to recall that colonial schools exercised a very shallow sort of hegemony and that the categories they put forward remained open to constant contestation. Spencer D. Segalla, *The Moroccan Soul: French Education, Colonial Ethnology, and Muslim Resistance, 1912-1956.* (Lincoln: Nebraska University Press, 2009), 8.
[117] Amster, 124; See also Holden, *The Politics of Food,* 100-106.
[118] Stacy Holden has also considered the forms of alliance and connection that developed between French officials and Moroccan workers in the Fasi context as well as the forms of social mobility that these alliances afforded workers. Holden, *The Politics of Food,* 106-111.
[119] Commission municipal de Casablanca, "Rapport de la séance du mercredi 26 mars 1919," A1694, AM, 4.

Moroccan residents—ranging from concern, to disregard, to outright neglect—also paralleled the hierarchical organization of Casablanca's factories and construction sites. Settlers from Italy, Spain, Greece, and Corsica tended to occupy positions as skilled workers and intermediaries between French managers and Moroccan laborers.[120] In some cases, they inhabited separate neighborhoods such as the Spanish enclave in Maarif, but many southern European settlers were pushed by necessity into closer proximity with Moroccan residents on the outskirts of burgeoning *bidonvilles*. With the rapid uptick in immigration after the end of WWI, these working-class southern Europeans found themselves at the center of a new set of concerns shared by French high officials and low-level technicians alike—anxieties that came to be grouped under the label of "crisis."

Defining Crisis

Gradually over the course of the 1920s, the relations between each of these racialized professional categories—engineers, architects, skilled workers, and laborers—as well as their imagined role within colonial society as a whole became entangled with an emerging debate about the causes and the shifting nature of Casablanca's urban "crisis." The "crisis," to which colonial urban experts referred was not quite a "crisis" in Reinhart Koselleck's sense of "an epochal concept pointing to an exceptionally rare, if not unique, transition period."[121] It did bear some resemblance to Janet Roitman's notion of crisis as a kind of "epistemological impasse," a meeting place between "Calculable forms of indeterminacy (risk) versus non-calculable forms of indeterminacy (uncertainty)," and thus a space from which to make claims about alternative forms of possibility.[122] I want to suggest, however, that risk and uncertainty were not opposed in

[120] Miller, *A History of Modern Morocco,* 111.
[121] Reinhart Koselleck, "Crisis," trans. Michaeka Richter, *Journal for the History of Ideas* 67, no. 2 (2006), 371
[122] Janet L. Roitman, *Anti-Crisis* (Durham: Duke University Press, 2013), 3; 74.

Protectorate-era Morocco. Instead, the language of crisis flourished in a colonial situation where the very boundary between risk and uncertainty was constantly being renegotiated. In other words, "crisis" enabled colonial planners to extend the domain of calculability in new directions while simultaneously preserving zones of non-knowledge.[123] And non-knowledge—calculated ignorance about the skills and desires of Moroccan workers or the transgressions of European speculators and landlords—was not obstacle to but a defining technique of colonial governance. In many cases, allusions to "crisis" under the Protectorate were more about staving off action than promoting interventions.[124]

The term "crisis" began to appear in administrative sources from Casablanca around 1919 after the end of WWI and the rapid uptick in the number of *colons* disembarking for Moroccan shores.[125] Early official references to "crisis" tended to cluster around two poles—housing and labor.[126] In the 1920s, discussions of crisis among municipal officials in Casablanca revolved around the housing shortages provoked by rapid European migration during and after WWI.[127]

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[123] This question of the production of "non-knowledge" relates to Scott Frickel's discussion of "agnotology," which considers the sites, practices, and rhetorics through which ignorance—of for example environmental hazards or particular forms of labor—is produced. I also draw here upon Jean-Baptiste Fressoz's point that confidence in technology had to be produced, and the process of producing this confidence involved generating ignorance about particular issues and problems. My aim here is to track how the production of ignorance about, for instance the demands and desires of Moroccans for particular materialities, was an essential feature of colonial governance and not as others have suggested a form of "misreading." Scott Frickel, "Missing New Orleans: Tracking Knowledge and Ignorance through an Urban Hazardscape," in *Histories of the Dustheap: Waste, Material Cultures, Social Justice*, ed. Stephanie Foote and Elizabeth Mazzolini (Cambridge, Mass.: MIT Press, 2012), 98–117; Jean-Baptiste Fressoz, *L'apocalypse joyeuse: Une histoire du risque technologique* (Paris: Éditions du Seuil, 2012), 15.

[124] This reading of "crisis" contrasts with Rachik's emphasis on how discussions of crisis in planning circles prompted radical urban interventions in Casablanca. Abderrahmane Rachik, *Casablanca: L'urbanisme de l'urgence* (Casablanca: Imprimerie El Jadida, 2002).

[125] Some of the earliest references I have found to Casablanca's "housing crisis" come from the Municipal Commission in early 1919. It is entirely possible, however, that earlier references exist. Stacy Holden has also discussed the "Wheat Crisis" of 1919-1920, another form of scarcity that was expressed in the language of crisis. Commission municipal de Casablanca, "Rapport de la séance du mercredi 26 mars 1919," A1694, AM, 4; Holden, *The Politics of Food in Modern Morocco,* 127-132.

[126] In reports produced by municipal officials in Casablanca the "labor crisis" and the "housing crisis" were interconnected, the former tending to accelerate the latte and vice versa. Commission municipal de Casablanca, "Rapport de la séance du mercredi 26 mars 1919," A1694, AM, 3-4.

[127] Lafarge, Chef des Services municipaux de Casablanca to Contrôleur Civil de la région de la Chaouia, February 2, 1921, A1414, AM; Lafarge to Contrôleur Civil de la région de la Chaouia, "Projet du Comptoir industriel des bois," April 8, 1921, A1414, AM; Carrieu, Commissaire Chef de la Sûreté régionale to Chef de la région civile

European workers living in close proximity to the Industrial Quarter in substandard housing were a central source of concern. Many early colonial public health interventions targeted the bodies of European workers rather than, or in addition to colonial subjects.[128] Municipal officials in Casablanca complained of "hovels [*taudis*] devoid of all hygiene where [European] workers lived in a state of formidable promiscuity, not only in terms of their physical and moral health, but for public health in general…."[129] Echoing a long history of metropolitan anxieties about the hygienic habits of the French working class, officials in Casablanca supported low-cost housing projects for European workers that were embedded with notions of moral uplift. One project proposed in 1921 by the Comptoir Industriel des Bois included plans for three hundred "temporary" wooden structures installed over concrete foundations with a large community garden at the center of the development.[130] The local municipal inspector feared, however, that "workers will have neither the means nor the leisure to properly manage gardens…these empty spaces, quickly transformed into a dump for materials and heterogeneous objects…will quickly turn the future neighborhood into a hotbed of infections and epidemics."[131]

Housing shortages in Casablanca provoked intense real estate speculation along with steadily rising rents. In the early 1920s, French architects and urbanists complained of chaotic and unregulated constructions in the European quarters.[132] Urban officials portrayed European settlers as active and dynamic, but also rapacious and potentially disruptive to the aims of

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Casablanca, "Réunion des locataires," August 22, 1920, A1414, AM; Chef des Services municipaux de la ville de Casablanca to Commissaire Resident Général, August 21, 1920, A1414, AM.

[128] Amster, 126-131.

[129] Memorandum, Chevreux, Secrétaire Général du Protectorat to Chefs de toutes les régions, "État actuel des habitations ouvrières," July 23, 1929, A1414, AM.

[130] Lafarge, Chef des Services municipaux de Casablanca to Contrôleur Civil de la région de la Chaouia, "Projet du Comptoir industriel des bois," April 8, 1921, A1414, AM.

[131] Lafarge, Chef des Services municipaux de Casablanca to Contrôleur Civil de la région de la Chaouia, "Projet du Comptoir industriel des bois," April 8, 1921, A1414, AM.

[132] F. Pertuzio, "Un grave danger menace Casablanca," *La construction au Maroc*, December 2, 1921,5.

colonial governance. Speculators and property owners were a continuous source of concern in part because of the political mobilization that their pursuit of profit provoked among less well-off European migrants. Casablanca's police officials closely monitored the activities of a "Renters' League" organized by settlers in the 1920s to protest the government's urban policies and to create their own network for keeping track of the worst abuses by the city's landlords.[133] Such organizations challenged the ability and the authority of urban professionals to effectively regulate the urban property market.

Lyautey's departure in 1925 spurred reevaluations of French urban policies while his immediate successors Theodore Steeg (1925-1928) and Lucien Saint (1929-1933) left the Protectorate's basic institutional structure largely unchanged.[134] During this period, the preservationist paradigms of Prost's urbanism came under increasing criticism from observers who remarked on their total incapacity to deal with the influx of rural migrants. One article in the journal *Travaux publics* reprinted Prost's 1917 observations on Casablanca's chaotic urban development and his plans to reform it under the heading "*examen de conscience."*[135] Another article in the French press, described the "aesthetic crisis" created on the one hand by Prost's overly rigid plans, on the other by their messy and impractical application.[136]

While densities continued to rise in the strictly delimited indigenous old city, European speculators planted scattered housing developments across Casablanca's urban periphery with little official oversight. Architects concerned about the frenetic pace of building sought to shore up the boundaries of their professional community and to protect its members from criticism and

[133] Carrieu, Commissaire Chef de la Sûreté régionale to Chef de la région civile Casablanca, "Réunion des locataires," August 22, 1920, A1414, AM.
[134] David Lambert, *Notables des colonies : Une éite de circonstance en Tunisie et au Maroc (1881-1939)* (Rennes: Presses universitaires de Rennes, 2019), 66.
[135] "Examen de conscience: En relisant un article de M. Henri Prost sur le plan de Casablanca, écrit en 1917," *Travaux publics,* July 16, 1932 [no page numbers], E0801, AM.
[136] Dechaud, "Soignons notre urbansime," *Presse marocaine,* December 1, 1931 [no page numbers], in E0801, AM.

legal action. After two catastrophic collapses of apartment buildings under construction in Casablanca in 1921—buildings that received authorizations from municipal officials but whose designs were later found to contain structural flaws—one professional journal laid the blame on the administration for failing to provide adequate technical surveillance. The journal called on the municipality to take "emergency measures" to assure that building authorizations would only be given to plans that had been signed and certified by a licensed architect who would oversee their execution as well.[137] The administration did not fully respond to these calls until 1931, when the city issued a municipal ordinance that revised the process for issuing building permits.[138] This ordinance also established a formal set of procedures for building inspectors to follow when verifying the progress of various construction projects. Further formalizing inspections and requiring certifications by licensed practitioners were ways of shoring up the authority of engineers and architects over a varied yet interrelated series of problems that the administration was gradually compiling under the label of "crisis."

For instance, Casablanca's housing shortages and rising rents were cyclically related to what Protectorate officials referred to as a labor "problem" and at times a labor "crisis."[139] The need to construct new housing for the waves of Europeans arriving in the city after WWI produced an elevated demand for skilled and unskilled construction workers. The influx of workers from abroad to participate in the construction industry aggravated the already existing housing deficit. Simple, temporary welcome centers for new arrivals along the rue d'Anfa and the rue Larache were quickly transformed into multi-family housing with "scandalous hygienic

[137] "Encore un écroulment," *La construction au Maroc*, December 2, 1921, 6.
[138] Ville de Casablanca, *Arrêté municipal permanent du février 1931 portant réglement général de voirie et de construction* (Casablanca: L'imprimerie française, 1931).
[139] Secrétaire Général du Protectorat to Chefs des Services municipaux, "Crise de la main d'oeuvre," January 30, 1929, A1636, AM.

conditions."[140] Casablanca's expanding industrial zone also lacked laborers. In a speech from July of 1929, Saint, described measures already taken to secure both skilled and unskilled labor for Casablanca's factories and on Morocco's extensive work sites. These included prohibiting Moroccan workers from leaving the country and cracking down on "clandestine departures," as well as creating services for luring European workers to the Protectorate and housing them upon arrival.[141] The Residency also crafted policies to support the mechanization of the building industry—such as removing tariffs on machine importations—to help deal with labor shortages.[142]

By the mid-1930s, however, official concern over the scarcity of jobs supplanted anxieties about the scarcity of labor.[143] The effects of the global depression were not felt in Morocco until 1931, but they gradually slowed urban construction and the pace of European migration to the Protectorate.[144] As with housing, French officials initially defined the "crisis" as one of European unemployment exclusively. Throughout the 1930s, road building served as cheap means for providing out-of-work settlers with temporary jobs. In 1936, the government in Rabat announced a large-scale program of road construction, hydraulic works, and slum improvement designed to relieve the pressures of unemployment.[145] Infrastructure building in rural areas—a means of gradually extending the French military's presence into unoccupied zones of Morocco —constituted a sort of safety value for providing European settlers with

[140] Chef des Services municipaux de la ville de Casablanca to Commissaire Resident Général, August 21, 1920, A1414, AM.
[141] Lucien Saint, "Le problème de la main-d'œuvre," *La construction au Maroc*, July 26, 1929, 269-270.
[142] Saint, 269.
[143] Stacy Holden has provided an account of struggles over scarce resources in Fez during the 1930s and the break down of an unwritten "social contract" between French officials and "Fez's working majority, guaranteeing a minimum standard of living in exchange for political quiescence." Holden, *The Politics of Food,* 173.
[144] Miller, *A History of Modern Morocco,* 140.
[145] "Le rapport du sous-comité du chomage et des travaux publics," *La construction au Maroc*, June 19, 1936, 198-200.

temporary work.[146] Even after the country's completed "pacification" in 1934, road construction in the countryside continued to offer a stop-gap solution for European *chômeurs.* The French army maintained this strategy, for instance during the completion of the road from the Taliouine to Ouarzazate in 1937, despite recognizing that the presence of Europeans considerably slowed the pace of road construction. Since European workers on the project were paid thirty francs per day—far more than the average Moroccan—the army laid off around three hundred local laborers to accommodate just fifty Europeans.[147] Unemployment programs also focused on maintaining and repairing hydraulic infrastructures in rural areas, such as a series of projects near Meknes that employed both European and Moroccan workers to repave a local *séguia* (irrigation channel) using concrete.[148]

For Moroccan workers, infrastructural projects that prioritized the hiring of settlers offered little reprieve. During the 1930s, the development of capitalist agriculture in the countryside coupled with droughts and other environmental disasters provoked a series of famines that drove increasing numbers of Moroccans to seek work in cities where jobs were already scarce.[149] Casablanca's slums expanded rapidly, housing perhaps half the city's Moroccan population by 1934.[150] Public health campaigns came for the first time to target not just European, but also Moroccan housing in the city. Explicit references to *bidonvilles* and other

[146] For an account of the links between French state-building, infrastructural development, and military occupation in Morocco see Jonathan Wyrtzen, "Colonial State-Building and the Negotiation of Arab and Berber Identity in Protectorate Morocco," *International Journal of Middle East Studies* 43, no. 2 (2011): 227–49.
[147] François, Adjoint au Général Commandant en chef des troupes du Maroc to Résident Général, "Emploi de chômeurs européens sur les chantiers de la route Taliouine-Ouarzazate," October 21, 1937, Box DE 2017 SA 481 / GR 3H 294, SHD.
[148] Subdivision de l'hydraulique, "Rapport sur la marché du services pendant le mois de janvier 1938," Direction générale des travaux publics, February 2, 1938, E0035, AM.
[149] Miller, 115; For a salient case-study see Adam Guerin, "Disaster Ecologies: Land, Peoples and the Colonial Modern in the Gharb, Morocco, 1911-1936," *Journal of the Economic and Social History of the Orient* 59, no. 3 (2016): 333–65.
[150] Albert Ayache, *Le mouvement syndical au Maroc,* 3 vols. (Paris: L'Harmattan, 1982), 1: 85, cited in Miller *A History of Modern Morocco,* 141.

forms of precarious dwellings were gradually enfolded within the language of crisis during this period. Casablanca's municipal officials also referred to the "struggle" against *noualas, derbs,* and *bidonvilles*. The precise form of a *nouala* was the subject of much debate among urban officials, but it was generally considered a sort of hut made from natural materials—a rural form imported into the city. *Bidonvilles* on the other hand were associated with discarded industrial debris, sometimes wood and sheet-metal or metal from containers known as *bidon.* Throughout the 1920s such forms of habitation proliferated across Casablanca, cropping up on vacant lots and in proximity to construction sites as "temporary" shelter for local laborers. Horrified by this situation and hoping to contain fears of contamination from Moroccan bodies after the outbreaks of typhus in 1920-21 and 1928-1929, the municipality banned *noualas* and *baraques* from the interior of the city in 1932. This led to a relocation of residents to what became Casablanca's second largest *bidonville,* Beni Msik.[151]

The emergence of the city's largest slum, the Carrières centrales was tied less to public health than to industrial expansion. The Industrial Zone created to the east of Casablanca included a sugar refinery (COSUMAR), a modernized slaughterhouse, the country's first cement plant, a power station (Centrale Thermique Électrique), and a number of other smaller industrial installations. Early experiments with worker housing projects (the Société des Chaux et Ciments which will be discussed in the following section was the first to construct a *cité ouvrière*) fell far short of supplying adequate shelter for all Moroccan laborers and their families. Around 1922, workers and their families began to gather in a large informal settlement surrounding the power station, a slum that by the time of its reorganization in 1953 would include almost 57,000 residents. The Carrières centrales was not only a hygienic threat to French experts. The

[151] Michel Hubert, "Casablanca: Le développement industriel l'habitat de l'ouvrier marocain" (Centre de hautes études d'administration musulmane, June 18, 1946), 715 MC, Fondation du Roi Abdul-Aziz Al Saoud.

bidonville would also become the nexus of the country's labor movement toward the end of the 1930s in spite of a 1936 *dahir* that prohibited Moroccan subjects from joining unions.[152] Moroccan industrial workers, and the illicit forms labor organization they engaged in, represented a troubling and often unstated manifestation of crisis for colonial officials. The mere task of keeping track of Moroccan workers—in documenting workplace accidents, for example—proved a difficult task as inspectors struggled even to implement a standardized orthographic system for transliterating Arabic names.[153]

The notions of crisis deployed by colonial officials also came to encompass new forms of urban political unrest. In 1930, widespread popular mobilization following the issuing of the Berber Dahir led to the rise of an urban nationalist movement in Morocco.[154] Street protests and the organizing successes of nationalists caused Protectorate officials to worry about the extent to which Muslim elites could exercise authority over the urban masses. When nationalist activists published the Plan of Reforms in 1934, they couched calls for the reorganization of the Protectorate system in critiques of the county's "crisis."[155] In the Plan's opening sections, its mostly Fasi authors made clear that the "Moroccan crisis" was not simply a product of the wider global economic crisis.[156] Morocco's internal crisis was first and foremost a product of colonial

[152] The CGT was among the first to actively recruit Moroccan workers in the country in spite of the ban. Jean Ratier, "Étude sociologique du bidonville des Carrières centrales" (CHEASAM, [undated, circa 1950]), AM, 31; For a systematic study of the Carrières centrales' history see Najib Taqi, *Jawanib min dhakira Karyan Santral-al-Hay al-Muhammadi bi-l-Dar al-Bayḍa' fi-l-qarn al-ʿashrin muhawala fi-l-tawthiq* (Casablanca: Les Éditions la croisée des chemins, 2012). On the labor movement specifically see Robert D. Forst, "The Origins and Early Development of the Union Marocaine du Travail," *International Journal of Middle East Studies* 7, no. 2 (1976): 271–87.
[153] Secrétaire Général du Protectorat to toutes autorités régionales, "Accidents du travail, déclaration des accidents, noms des marocains," September 11, 1933, A1636, AM. The transliteration system the administration eventually adopted included designations that marked Moroccan names as either "Berber" or "Arab" in origin.
[154] For more in depth discussions of the response to the Berber Dahir see Miller, *A History of Modern Morocco,* 125-129*;* Jonathan Wyrtzen, *Making Morocco: Colonial Intervention and the Politics of Identity* (Ithaca: Cornell University Press, 2016); William A. Hoisington, "Cities in Revolt: The Berber Dahir (1930) and France's Urban Strategy in Morocco," *Journal of Contemporary History* 13, no. 3 (1978): 433–48.
[155] Miller, *A History of Modern Morocco,* 133.
[156] Moroccan Action Committee, *Plan de réformes marocaines* (Paris: Impr. Labor, 1934), 7.

governance and the Protectorate's racialized policies.[157] The plan cited the near total neglect of public education for Moroccans, the use of urban legislation to dispossess locals and benefit *colons*, and the attempted attack on the country's "Arab culture" through measures like the Berber *dahir* as the worst offenses.[158] Among the proposed reforms, the committee argued for creating Moroccan technical cadres who would occupy positions within the administration and for cultivating the technical knowledge of the population at large.[159] This meant building a higher education system, creating opportunities for future engineers to study in France, and expanding vocational training in Moroccan primary schools.[160] The plan also put forward a number of measures aimed at improving the living and working conditions of Moroccan laborers and specialized artisans.[161] In spite of its systemic critiques of the colonial system, the document signaled how the first generation of Moroccan nationalists had taken up both the language of crisis, and, fundamental assumptions about the necessity of a sociotechnical hierarchy between workers and experts. At the same time, the plan reveals how the precise contours of "crisis"—its origins and solutions—and the composition of the Protectorate's technical hierarchies—whether or not these would include a class of Moroccan technicians—remained open to debate.[162]

To counter these nationalist visions of a reformed sociotechnical order, French officials

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[157] In the plan's French version, the Committee's authors use the terms *race* and *racial.* In the Arabic version, reprinted in Rabat in 1979, the authors refer to *sīyāsat al-imtīyāzāt al-ʿunṣuriyya,* a "politics of racial privileges." Moroccan Action Committee, *Plan de réformes marocaines*, 8; Moroccan Action Committee, *Maṭālib al-shaʿb al-Maghribī : Hadhihi al-maṭālib ḥaḍarrahā al-Kutlah al-ʿĀmilal al-Waṭanīyah fī al-Maghrib al-aqṣá bi-istishārat kull man yuhimmuhum al-amr min sā'ir al-awsaṭ wa-qaddamahā bi-ism al-shaʿb al-Maghribī muzawwidan bi-thiqatihi wafdihi al-amīn ilá ḥaḍrat ṣāḥib al-jalālah mawlānā al-malik Sīdī Muḥammad ibn Yūsuf aydahu Allāh wa-naṣrihi* (Rabat: al-Maṭbaʿah al-Malikīyah, 1979), 1.

[158] Moroccan Action Committee, *Plan de réformes marocaines*, 8-11.

[159] Moroccan Action Committee, *Plan de réformes marocaines*, 25; 35; 86-87.

[160] Moroccan Action Committee, *Plan de réformes marocaines*, 86-87.

[161] For laborers this included aligning legislation on work place safety, the eight hour workday, and wage requirements with international standards and providing low-cost housing for workers. For artisans, the plan envisioned protectionist legislation and the organization of trade based unions, Moroccan Action Committee, *Plan de réformes marocaines*, 101-105.

[162] French commentators like Robert Montagne also adopted this language of crisis in discussing the demands of urban nationalists. Robert Montagne, "La crise nationaliste au Maroc," *Politique étrangère* 2, no. 6 (1937): 535–62.

and industrialists sought to rely on the professional relationships and personal connections supposedly created between French technicians and local laborers. Supplying housing and (as will be discussed in the following chapter) construction materials to Moroccan residents represented one measure taken by an anxious administration to win the assent of Muslim workers. New Moroccan housing built near the Industrial Quarter in the late 1930s aimed to create not just physical structures but also new links between the administration, technicians, and locals. One measure adopted by the municipality was to prioritize the hiring of Moroccan contractors and laborers for the construction of "indigenous housing." In protest, the Chambre Syndicale des Entrepreneurs Français, the local Chamber of Commerce, issued a report celebrating, "the collaboration that French entrepreneurs are and will always be able to bring to all France's endeavors and to French architects in particular, in order to strengthen and develop, in a direct and necessary union with the Moroccan working population, French influence in Morocco."[163] The report noted the administration's recent preference for hiring Muslim *muʿallimūn*—skilled workers such as masons or specialists of traditional crafts—as opposed to French contractors who simply employed local laborers. According to the report, Muslim renters had never objected to the role of French entrepreneurs in constructing their future dwellings and were mystified by the replacement of French contractors by *muʿallimūn.*[164] In opposition to the administration's suggestion that the hiring of Muslim craftsmen was a political necessity, the French entrepreneurs touted their role as emissaries of and intermediaries between the Protectorate and Moroccan workers.

Casablanca's spectacular growth during the first two decades of French rule created a

[163] Chambre syndicale des entrepreneurs français, "Note sur l'execution de certaines habitations pour indigènes," exposé devant le délégué à la Residence Générale, February 3, 1939, E0831, AM, 3.
[164] Chambre syndicale des entrepreneurs français, "Note sur l'execution de certaines habitations pour indigènes," exposé devant le délégué à la Residence Générale, February 3, 1939, E0831, AM, 4.

situation in which architects, engineers, and other members of a class of technicians— the communities at the center of Lyautey's vision for a culturally sensitive and paternalistic colonial technocracy—found their authority within the Protectorate called into question.[165] In the face of an increasingly large and assertive European settler population in Casablanca, urban professionals—executors of Lyautey's modernizing project—came under fire for collapsed structures, public health risks, and growing unrest in the suffocatingly dense old city. Architects, engineers, and planners struck back by identifying rampant and rapacious real estate speculation as the true culprit in an intensifying urban crisis. In the process, they defined themselves as the proper protectors of Morocco's local population. This emergent language of "crisis" in urban Morocco was a way for these urban professionals to ward off challenges to their prestige and assert their authority over the project of technical modernization against other branches of the Protectorate state, against ambitious European settlers, and eventually against nationalist notables as well.

"Crisis" gave colonial urban experts what Lyautey's model could not: a way of grouping together urban conditions in such a way that only "technological" solutions would suffice. This is not to suggest that crisis planning was a means of "depoliticizing" conflicts over resources, governance, or urban space by casting them as *merely* technical problems. Rather, the urban experts who wove professional trajectories within and outside of the Protectorate administration expressed, for the most part, an awareness of the profoundly political nature of their work in Morocco. The varied references to "crisis" that emerge in French technical and administrative

[165] Paul Rabinow suggests that Lyautey and his experts enacted this urbanism of emergency intervention as an attempt to smooth over Morocco's supposedly brutal transition to modernity. Rabinow's emphasis on how colonial planners understood categories such as "modernity" and "society" overlooks the types of technopolitical work that these terms accomplished on the contested political terrain of Casablanca's built environment. In other words, Rabinow seems to miss at times the ways in which French experts failed to exercise an exclusive right to define Morocco's urban problems, and the ways that references to "crisis" worked to shore up their contested authority. Rabinow, *French Modern,* 296; 299-301.

sources from the late 1910s onward are better considered as a way of naming a particular politics of material distribution. Crisis was assembled as a multifarious object of knowledge by urbanists, architects, engineers, financiers, and industrialists and officials who relied on administrative data and direct observations to stage forms of urban struggle as arguments for emergency management. Rhetorically, arguments about crisis suggested containing and regulating the movements of European settlers—portrayed as active and rapacious—while designating local communities in Casablanca and elsewhere as fundamentally passive and in need of protection yet paradoxically a potential source of violence, contamination, and unrest.

What gave arguments about crisis their longevity, however, was not such rhetorical acts of labeling, but the work of urban experts and others—including European and Moroccan laborers and residents of the *bidonvilles*—to conjoin crisis with a collection of materialities—a fully-fledged "sociotechnical imaginary" with concrete at its center.[166]

Defining Concrete

"Concrete is *modern,"* asserts the architectural historian, Adrian Forty. *"*This is not just to say that now it is here, when before it wasn't, but that it is one of the agents through which our experience of modernity is mediated. Concrete tells us what it means to be modern."[167] In colonial Morocco concrete became inextricably intertwined, symbolically and materially, not only with grand visions of modernization, but also with the practical and peculiar everyday politics of the French Protectorate. In considering how concrete—along with its most socially and technologically complex component, cement—came to be the quintessentially "modern" material in colonial Casablanca, this section traces not concrete's inevitable triumph, but the

[166] Jasanoff, 4.
[167] Adrian Forty, *Concrete and Culture: A Material History* (London: Reaktion Books, 2016), 14.

conflicts, compromises, and forms of competition that wove it into the fabric of everyday life during the interwar years. Concrete and cement, however, are not singular or homogeneous objects, either metaphorically or materially. Nor are they simply "multiple" in the sense proposed by philosophers and anthropologists of science and technology—that is to say, enacted in ontologically complex and at times contradictory ways by distinct communities of practitioners.[168] Rather groups of colonial experts and others have debated and divided the question of what counts as concrete while simultaneously multiplying its varieties, capacities, and affordances. Concrete had to be *made* multiple to serve as concrete. French engineers, for instance, worked diligently to ontologically separate *their* cement from the substance used by their counterparts in the U.S. by tweaking the technical specifications of the manufacturing process, adopting different measurements for its chemical composition, pioneering unique testing procedures, and seeking out distinct physical properties in the finished product.[169] Concrete, the quintessentially modern material, and cement, a quintessentially modern industrial product, were also *made* Moroccan as they remade the built environment of Moroccan cities. To be made Moroccan meant to be mixed with Moroccan sands and water, manufactured by Moroccan laborers, handled by Moroccan masons, deployed in Moroccan construction projects. The anxieties that many colonial engineers expressed about this process of becoming Moroccan were key to how cement and concrete came to be positioned at the center of various crises for interwar urbanism in the country.

Casablanca's role as the economic capital of the Protectorate was from the very start

[168] On ways of thinking "multiplicity" in STS scholarship see Annemarie Mol, *The Body Multiple: Ontology in Medical Practice* (Durham: Duke University Press, 2002); John Law, *Aircraft Stories: Decentering the Object in Technoscience* (Durham, NC: Duke University Press, 2002); Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford University Press, 2005).
[169] "Le ciment en France et en Amérique," *La construction au Maroc* 206 (October 16, 1925): 522–23.

entwined with concrete. A series of geological and engineering studies carried out in 1912 on the eve of the treaty of Fez identified Casablanca as the ideal site for the country's first cement plant. Its coastal location, proximity to zones of raw material extraction, and large European colony made the city an obvious choice.[170] One year later, the Société des Chaux, Ciments et Matériaux de Construction au Maroc (CCM) was formed and embarked on the task of erecting one of the city's largest factories. The engineer Charles Candlot was charged with installing the factory in "les Roches-Noires," an area of Casablanca itself named for the qualities of its raw materials.[171] Candlot and his collaborator Perpignani had developed an industrial system for cement production that had already been tested in other colonial settings such as Algeria and Indochina.[172] Charles's father, Édouard Candlot was also an engineer specialized in cement manufacturing as well as a major investor and the one time chair of the company's board of directors.

While German engineering tended to dominate the design of cement plants in metropolitan France, in Morocco the manufacture of cement was conceived as a thoroughly French process.[173] Limestone and clay— extracted from nearby quarries—passed first through the crusher (*concasseur*), and were then dried in one of the factory's four silos before passing through two grinders (*broyeurs*) powered by Citroën engines. The now finely ground raw powder was stored again in a series of silos before being mixed with additional materials, compacted into bricks, and finally sent to the plant's kiln. The central feature of Casablanca's original cement plan, the single, fixed kiln (vertical shaft kiln) signaled a distinct technopolitical choice. Rotary

[170] Dantin, "Fabrique de ciment et de chaux hydraulique à Casablanca (Maroc)," *Le génie civil* 8 (1919), 3.
[171] Dantin, 3.
[172] Dantin, 10.
[173] Dantin notes that, at the time, German engineers set the standard for cement plant design, and that a project entirely of "French conception and execution" would have been unusal in the metropole. Dantin, 3.

kilns had been displacing fixed kilns in Europe since their invention in the late 19th century. Though they burned twice as much carbon as their fixed predecessors, rotary kilns came to be seen as cutting edge technology, partially because they heated the material more evenly and because they allowed for the near total elimination of laborers from this stage of the production process.[174] Coal, however, was costly and imported in Morocco at the time, and colonial entrepreneurs and administrators were devoted to keeping Moroccan labor cheap. Defending the technological choices of Casablanca's cement plant, one engineer argued that:

> The advantages of the vertical shaft kiln are indisputable, and it is difficult to understand the infatuation for the rotating kiln in recent years. This [rotating] kiln is perfectly suitable in countries such as the United States where coal is cheap and labor is expensive…but we can affirm that in all of the cases where [the plant] is operated using the dry method and coal is relatively costly, adopting the vertical shaft kiln allows for significant savings vis-a-vis the rotating kiln.[175]

It was colonial political economy—legal and institutional measures for keeping Moroccan labor cheap such as the prohibition of labor unions for indigenous workers—that rendered the vertical kiln an "obvious" technological choice for the country's first cement plant. In addition to tending the kiln, Moroccan workers extracted clinker from the bottom of the shaft, transported it to another crusher, then a storage hangar, and eventually bagged the finished product. Meanwhile European engineers in the company's on-site laboratory tested samples to verify the correct chemical composition of each batch.[176] Technology like the vertical kiln not only produced the base material necessary for the creation of a colonial built environment in Casablanca, but also tied this built environment to the racialized division of labor at the heart of colonial industrial endeavors.

[174] Réunion d'ingénieurs, *Matériaux de construction* (Paris: Éditions Eyrolles, 1968), 44.
[175] Dantin, 12.
[176] Dantin, 15–16.

The nearby quarries that supplied the factory with raw materials together with the local power station that provisioned electricity to the plant's grinders and crushers imparted a name to the surrounding neighborhood, the Carrières centrales. The "Palmier" brand hydraulic cement produced at the factory supported much Casablanca's iconic new architecture including the slaughterhouse and the Hôtel Excelsior as well as roads, bridges, and railways constructed across the Protectorate.[177] The plant's production schedule was jump-started at the start of WWI due to an official ban on cement exports from the metropole, which had filled most of the Protectorate's demand during its early years.[178] While the importation of cement began again after the war's end, officials and industrialists in Casablanca planned for the day when the local cement industry could supply the entire country. By the beginning of the 1930s, however, it had become clear that the Roches Noires plant could not possibly keep up with local demand or compete with increasingly cheap cements from Europe.[179] The directors of the CCM complained in particular about the dumping of English and Belgian products on the Moroccan market.[180] With the financial involvement of the Pavin de Lafarge group which merged with the CCM in 1930, the company set about constructing a new "modern" factory with rotating kilns and a much greater productive capacity.[181] Competition with cheap foreign cements led Protectorate officials to insist again, however, that a major advantage of the local industry was the presence of "a cheap, abundant labor force, whose daily work load is not limited to eight hours, and for whom the

[177] J. Goulven, "La construction," *La construction au Maroc*, January 11, 1924, 113.
[178] Ministre des Affaires Étrangères to Général Lyautey, "A.s. de la Société des chaux et ciments au Maroc," November 24, 1917, C20, AM.
[179] La Banque d'état du Maroc, "Note confidentielle sur l'industrie cimentière marocaine," sent by Chef du Bureau du commerce et de l'industrie to Chef du Service du commerce et de l'industrie, April 14, 1932, C240, AM
[180] Directeur Commercial and Director Général of the Société des chaux, ciments et matériaux de construction au Maroc to Chef du Service du commerce et de l'industrie, March 31, 1932, C240, AM; La Banque d'état du Maroc, "Note confidentielle sur l'industrie cimentière marocaine."
[181] La Banque d'état du Maroc, "Note confidentielle sur l'industrie cimentière marocaine" ; Marc Bonnet, "Le ciment au Maroc," *Construire*, November 12, 1955, 817. A separate company La Société Poliet-Chausson Maroc opened another plant in 1931. Note Transmitted by Léon Barety, "Les cimenteries marocaines, leur situation critique, les cause de cette situation," February 1, 1934, C240, AM, 1.

company is not compelled to provide (retirement, social security, etc…)."[182] The local cement industry struggled to maintain profitability during this period, and the CCM called for official measures that would protect "Moroccan cement" from its European counterpart.[183] This included requiring state-funded public works projects to use "Moroccan" as opposed to "foreign" cement in their execution.[184]

Around the time of the new Lafarge plant's construction, the company commissioned Edmond Brion—a frequent collaborator of Cadet's—to design a housing project for the company's workers, among the first of its kind in Morocco. Completed around 1932, the project included 142 dwellings as well as a mosque, collective fountains, and artisanal decorative features typical of the Neo-Moroccan style.[185] Built to reproduce the atmosphere of a Moroccan *madīna,* the Lafarge project, as well as Brion's more iconic *cité* COSUMAR, relied heavily on the labor of Moroccan masons and other artisans in their construction.[186] A life-long resident of Casablanca, Hamid Berghout described growing up in the *cité* during a later period.[187] After migrating from Taroudant, his father found work in the plant at a time when a large contingent of the factory's workers came from Tashelhiyt-speaking parts of the Sous. After marrying, Berghouth's father was given authorization to move from the nearby shantytowns into the project itself. The simple, single-story dwellings of the *cité* lacked individual connections to

[182] Chef du Bureau du commerce et de l'industrie to chef du Service du commerce et de l'industrie, "Situation des usines de chaux et ciments," March 23, 1932, C240, AM.
[183] Directeur Commercial and Director Général of the Société des chaux, ciments et matériaux de construction au Maroc to the Chef du Service du commerce et de l'industrie, March 31, 1932, C240, AM; Note Transmitted by Léon Barety, "Les cimenteries marocaines, leur situation critique, les cause de cette situation," February 1, 1934, C240, AM, 1; Chef du Bureau du commerce et de l'Industrie to Chef du Service du commerce et de l'industrie, "Situation des usines de chaux et ciments," March 23, 1932, C240, AM
[184] Note Transmitted by Léon Barety, "Les cimentéries marocaines, leur situation critique, les cause de cette situation," February 1, 1934, C240, AM, 4.
[185] Michel Hubert, "Casablanca: Le développement industriel l'habitat de l'ouvrier Marocain," 7.
[186] Edmond Pauty, "Tradition et modernisme à Casablanca," *L'architecture outre-mer*, April 1936, 140.
[187] Interview, Hamid Berghouth, May 2017. By my own estimation Berghouth's father would have arrived sometime in the 1940s.

Casablanca's water and electricity grids, relying instead on a handful of fountains and a collective oven located in center of the project. Given the company's anxieties about the mobility of their labor force—the frequent and seemingly spontaneous return of rural migrants in Casablanca back to their regions of origin—the project and its concrete structures, like other examples of worker housing in 1930s Casablanca, aimed to fix workers in place.

Figure 3: Present-day Entrance of the Cité Lafarge, photo by author.

During the first decades of the Protectorate, the consumption of cement was not limited to projects explicitly approved by architects, engineers, or Protectorate officials. Moroccan artisans, masons, and construction workers represented a distinct category of consumer. Local masons in Casablanca employed cement largely in repair and maintenance work as opposed to

new construction—presumably because of the prohibitions on building in the *madīna* during Henri Prost's tenure.[188] One cement importer, the Société Nantaise d'Importation au Maroc, argued during a moment of wartime rationing for keeping these masons well supplied so that the essential everyday maintenance work they carried out could continue.[189] These concerns about provisioning Moroccan artisans, however, took place in a context where the French army had deemed the cement produced by CCM ill-suited for both maritime works and indeed all military constructions in reinforced concrete.[190] On the whole, the forms of repair and daily maintenance work carried out by these Moroccan masons were a marginal portion of Casablanca's construction industry.

Cement was only one component of Casablanca's booming construction economy. A fledging metallurgical industry, a number of building material importers, and a host of engineering firms employed a network of manufacturers, suppliers, builders, and engineers in the city. The first reinforced concrete structures in Morocco were likely designed by Hennebique—the firm founded in 1896 by the engineer and entrepreneur François Hennebique who held the patent on the most widespread system for building with *béton armé* in the French-speaking world. Hennebique provided the plans for multiple Casablanca-based projects during the early years of the Protectorate. These included the Église du Christ-Roi and a number of industrial structures, including the 1926 extension and modernization of the Roches Noires cement plant.[191] Engineers in Casablanca exercised a virtually unquestioned epistemic authority over reinforced

[188] Maurice Chanforan, Directeur Général au Maroc de la Société nantaise d'importation au Maroc to Boissière, Directeur du Bureau de ravitaillement, December 29, 1917, C20, AM.
[189] Maurice Chanforan, Directeur Général au Maroc de la Société nantaise d'importation au Maroc to Boissière, Directeur du Bureau de ravitaillement, December 29, 1917, C20, AM.
[190] Déplanque, Officier d'Administration du Génie to the Contrôleur de l'Armée, August 14, 1917, C20, AM. Compare this with the forms of support French officials provided to the building trades in Fez as described by Stacy Holden. Holden, *The Politics of Food,* 113-114.
[191] Hennebique to Julia and Rieu, April 17, 1929, 076 Ifa 2084/11, AAXXS; Schematics furnished by Bétons Armés Hennebique, December 12, 1933, 076 Ifa 3316/17,AAXXS.

concrete construction.[192] As a professional class, engineers in both the public and private sector were largely recruited from France. For the Protectorate's Public Works Administration, the largest public consumer of cement, French citizenship was a requirement for employment as an engineer.[193] Technical hierarchies mapped rigidly onto colonial ones with Moroccan skilled workers effectively excluded from the category of the *technicien.* Even when they did provide for the limited vocational training, the paltry educational resources devoted the "public instruction" of Moroccan residents an Casablanca tended to track students into low-level technical positions.[194] So entangled was the category of the engineer with notions of Frenchness that even decades later in 1948, the Director of Public Works could claim *incorrectly* that "there are no Muslim Moroccan engineers."[195] The Spanish Protectorate in the north presented a stark counterexample, where the administration would permit and even encourage Muslim subjects to pursue their engineering education in Cairo or Damascus. Some of these Moroccan engineers later returned and crossed into the French zone, where they became a source for concern among colonial police officials and eked out a living working on informal construction projects.[196]

For the mostly French engineering community in Casablanca as well as for others involved in the building industry, professional journals provided a space for linking together an

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[192] Thomas F Gieryn, *Cultural Boundaries of Science: Credibility on the Line* (Chicago: University of Chicago Press, 1999), 15.

[193] "Concours et examens de 1926 pour l'admission au grade d'ingenieur adjoint des travaux publics de l'état," [undated], E0398, AM, 2.

[194] For studies of colonial education policies in Morocco see Spencer D. Segalla, *The Moroccan Soul: French Education, Colonial Ethnology, and Muslim Resistance, 1912-1956.* (Lincoln: Nebraska University Press, 2009); Fanny Colonna, "Benhlal Mohamed, Le collège d'Azrou ; La formation d'une élite berbère civile et militaire au Maroc, Karthala- iremam, 2005, 413 p.," *Revue des mondes musulmans et de la Méditerranée*, no. 117–118 (July 23, 2007): 289–91; Spencer D. Segalla, "French Colonial Education and Elite Moroccan Muslim Resistance, from the Treaty of Fes to the Berber Dahir," *The Journal of North African Studies* 11, no. 1 (March 1, 2006): 85–106; Katherine E. Hoffman, "Purity and Contamination: Language Ideologies in French Colonial Native Policy in Morocco," *Comparative Studies in Society and History* 50, no. 3 (July 2008): 724–52.

[195] Girard, Directeur des Travaux Publics to Secrétaire Général du Protectorat, "Conférence technique mondiale," July 6, 1948, 1MA/1/221, CADN.

[196] I am currently working on an article length project on this phenomena centered the trajectory of one particular indigenous engineer, Abdesselem Abderrahman Diouri.

imagined network of technicians and others concerned with concrete. Founded in 1921, *La construction au Maroc* was a major venue for debates among French-speaking urban professionals about the future of Morocco's built environment. These ranged from minute technical disputes about the performance of different varieties of cement in the country's coastal climate to contests over which modern forms and materials could best capture the essence of Islamic architecture. The founder L.J. Durante saw the journal as an "organ for linking together all of the professions scattered across a vast territory, this army of engineers, architects, entrepreneurs, and industrialists who have set in motion the powerful organizations destined to make Morocco the most beautiful of French possessions."[197] Positioning the project within Lyautey's lineage, Durante concluded the review's first article with the Resident General's saying that "a work site is worth a battalion."[198] The journal published articles about metropolitan and international advances in construction technology, including projects in other parts of the French empire. Engineers in Morocco who read the journal participated in their wider professional communities by tracking the spectacular progress of the Tennessee Valley Authority or commiserating about the difficulties of colonial construction work with colleagues in the Congo. While circulating studies conducted in France, the journal also printed articles cautioning against the direct application of metropolitan standards in diverse colonial climes.[199]

La construction au Maroc also celebrated the Protectorate itself as a key site of experimentation and technology transfer—where new concrete forms could be developed or adapted. In 1923, two Casablanca-based engineers, De Ziegler and Soulier reported on the

[197] L.-J. Durante, "La construction au Maroc," *La construction au Maroc*, November 11, 1921, 5.
[198] Durante, 5.
[199] In the case of "super-cements," their development in France and cautionary directives about their applications in warmer climates see Henry Lossier, "Résultats d'expériences sur les ciments à durcissement rapide," *La construction au Maroc* 116 (January 25, 1924): 139–41; "Les super-ciments et leur adaptabilité d'emploi aux bétons exécutés en pays chauds," *La construction au Maroc* 589 (February 17, 1933): 63–65.

testing of a new kind of "hollow concrete flooring" composed of standardized blocks (Moellons Dux, produced by Compagnie Francaise du Nord Marocain) on a reinforced concrete frame.[200] The blocks, used in the building of several schools in Casablanca, were manufactured from a blend of cork and cement, which provided better thermal and acoustic insulation than poured concrete while requiring far less cement. The authors trumpeted the superiority of these methods over poured concrete and envisioned a future industry for producing standardized concrete blocks and precast slabs in Morocco *en masse* to "satisfy all demands."[201]

Professional journals were not only venue for diffusing the argument that a collection of construction technologies could serve as a practical solution to a diverse array of urban problems. A 1932 article in *La vigie marocaine* entitled "Moralités d'urbanisme," typified how expert visions of crisis and concrete spread throughout the French language press. The article wove a portrait of rampant speculation, overcrowding in the *madīna,* patios turned into separate apartments, frequent collapses, and bodily and moral deterioration in the slums.[202] In a context where the paper's audience widely accepted slums as a permanent feature of urban life, new construction technologies appeared to offer a means of gradual ethical correction. The author clarified, "it is not that modern buildings are necessarily flawless, or that reinforced cement [sic. concrete] is always a guardian of virtue. But the clarity and the comfort of a dwelling purifies morals like the sun purifies bodies."[203] Drawing upon semiotic qualities of lightness and purity, a few architects in the early Protectorate produced work that foregrounded the aesthetic qualities of reinforced concrete. Auguste Perret, the French modernist whose career was perhaps the most intimately entwined with concrete and its materiality, designed a set of warehouses in Casablanca

[200] Ziegler and Soulier, "Plancher creux en béton armé," *La construction au Maroc*, November 9, 1923, 789-791.
[201] Ziegler and Soulier, 791.
[202] "Moralités d'urbanisme," *La vigie marocaine*, May 18, 1932, no page numbers, E0810, AM.
[203] "Moralités d'urbanisme," *La vigie marocaine*, May 18, 1932, no page numbers, E0810, AM.

with his brother Gustave.[204] The structures' thin, low-arching concrete vaults—5cm thick for a distance of around 7.5m—were a technical marvel at the time, and the Perret brothers replicated this feature for other industrial structures in city.[205]

The Perrets' technically ambitious work with concrete emerged in a context where colonial engineers were working to shore up the boundaries of their professional community and to distinguish themselves from their colleagues in architecture.[206] Emphasizing concrete's role as a construction technology—with properties that could be defined and redefined by adjusting its chemical composition—rather than an aesthetic vehicle was one means of laying claim to a technopolitical mandate that excluded architects.[207] During the first decades of the Protectorate, it was architects not engineers who held pride of place in administration's technical hierarchy. In 1924, the civil engineer, Jean Raymond, presented a series of arguments in *La construction au Maroc* as to why the work of engineers could be considered "at least as important as that of the architect."[208] Raymond lamented that engineers had recently been excluded from urbanism, the privileged domain of architects like Prost, but also suggested that engineers were gradually entering the field of urban planning.[209] In this vision, what distinguished engineers from their colleagues in architecture was their infrastructural expertise. Electricity, water, and gas as well as bridges, railways, and roads—these networks composed the urban fabric, and according to Raymond they fell unquestionably under the purview of the engineering community. This

[204] Maurice Culot et al., *Les frères Perret : L'oeuvre complète* (Paris: Institut français d'architecture : Éditions Norma, 2000), 106-107.
[205] Maurice Culot et al., 106-107.
[206] Gieryn, *Cultural Boundaries of Science,* 2.
[207] Examples of this emphasis abound in *La construction au Maroc.* P. Dumesnil, "Les super ciments," *La construction au Maroc* 269 (December 31, 1926): 59–60; "Influence de l'humidité sur le durcissement du béton," *La construction au Maroc* 255 (September 24, 1926): 369–70.; G. Leflot, "Nouvelles instructions relatives à l'emploi du béton armé," *La construction au Maroc* 227 (March 12, 1926): 146–47. To cite only a few examples.
[208] Jean Raymond, "Le rôle de l'ingénieur dans l'étude des cités nouvelles," *La construction au Maroc* 134 (May 30, 1924), 361.
[209] Raymond, "Le rôle de l'ingénieur dans l'étude des cités nouvelles," 360.

infrastructural expertise rested first and foremost on engineers' ability to master the material properties of concrete at a more fine-grained, precise level than other communities of urban professionals. In a context where timber was scarce and valuable cedar largely reserved for export to France, concrete filled many of the roles in infrastructure building that would have been reserved for wood in metropolitan construction projects.[210]

Yet not all members of the engineering community agreed that concrete was necessarily the appropriate vehicle for advancing their professional interests. For engineers such as Haller, the problems of concrete construction in Morocco stemmed not from the material's inflexibility but from the deficiencies of the Moroccan environment itself.[211] In a 1921 article for *La construction au Maroc,* he invites his contemporaries to compare the "marvelous concrete made with the clean, crisp, and granny sands of the Marne and the gravels of the Seine…" with the "impoverish sands of the Roches-Noires, chalky, fine and full of shells and dirty water."[212] The inconsistencies of Moroccan sands translated into weakened structures. Even the water used to mix concrete, brackish and full of magnesium, supposedly threatened the reliability of the finished product. Powerful coastal winds and hot *sharqis* from the Sahara dried and damaged mortar on work sites. These descriptions of the Moroccan environment as ill-suited to the processes of modern construction work blended seamlessly with critiques of Morocco's workforce as poorly skilled.[213] In this vision, concrete—a mixture of cement, aggregate, and water—was literally imbued with the properties of the local environment and the imagined

[210] Axel Hansteen Oxholm, *The French Lumber Market* (U.S. Government Printing Office, 1925), 35.
[211] For an account of how French experts imagined these environmental deficiencies in Morocco in relation to agriculture and desertification as well as their relationship with earlier French claims about Algerian environments see Diana K. Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonial Expansion in North Africa* (Athens: Ohio University Press, 2007).
[212] Haller, "La critique du ciment armé," *La construction au Maroc*, November 18, 1921, 5.
[213] In 1928, a letter to Hennebique's director expressed the need for studies of reinforced concrete's properties to account for differences of temperature in Morocco. Unsigned to LeFlot, Directeur de Bétons Armé Hennebique, July 8, 1928, 076 Ifa 2061/8, AAXXS.

characteristics of local laborers. Translated differently, the environment—from ambient humidity to the chemical composition of limestone extracted by Moroccan workers from quarries in Casablanca—was inscribed within the physical form of Moroccan concrete. This process of inscription lent an instability to concrete that troubled its smooth deployment within colonial modernization projects. However, the fact that concrete could be troublesome also served as a justification for the distinct importance of colonial engineers who were trained to manipulate its properties.[214]

Arguments about the qualities of Moroccan concrete also played out against the backdrop of stylistic debates inherited from Lyautey's tenure as resident general and administrative disagreements over which industries and forms of urban development to support. In the context of Casablanca's demographic explosion, advocates of higher densities and increased verticality clashed with those who saw the continued adaption of Moroccan forms and methods to French construction practices as a way forward. This debate was not framed as matter of "modernity vs. tradition," but rather of two competing visions of modernization—both of which mobilized reductive understandings of Islamic architecture and its principles. One key conflict during the early 1930s revolved around the possibility of promoting steel-frame architecture in the Protectorate. In the analysis of one Casablanca-based engineer, visions of an urban future cast in steel—and based on processes originating in the U.S.—would undoubtedly have a role to play in European metropolises, but were highly objectionable in Morocco.[215] In contrast to the country's embryonic metallurgical factories, "reinforced concrete is, so to speak, a local industry."[216] The

[214] In *La construction au Maroc* see for example "Influence de l'humidité sur le durcissement du béton," *La construction au Maroc* 255 (September 24, 1926): 369–70; "Le contrôle du béton armé sur le chantier," *La construction au Maroc* 232 (April 16, 1926): 186–87.
[215] A. Surville, "L'opinion d'un entrepreneur casablancais sur la grand construction métallique," *Travaux publics*, May 7, 1932, no page numbers, E0810, AM.
[216] A. Surville, "L'opinion d'un entrepreneur casablancais sur la grand construction métallique," *Travaux publics*, May 7, 1932, no page numbers, E0810, AM.

author argued that steel, moreover, was incompatible with the Neo-Moroccan style that had been developed by architects such as Prost, Cadet, and Brion since the early years of the Protectorate.[217] Concrete undergirded the political aims of this Neo-Moroccan aesthetic—described in detail by Gwendolyn Wright—semantically as well as materially.[218] The semiotics of concrete—its distinguishing qualities as a material—appeared suited to the ethics of adaptation and association supported by many colonial officials and experts. The same anonymous engineer claimed that "'standardized' metals will never allow for the ingenuity, the flexibility, and the variety or be able to adapt to every architectural design in the same way as concrete, the flexible material *par excellence.*"[219] The term "flexibility" itself (*souplesse* in French) held associations that where at once technical and moral—a physical property of things and a quality for describing forms of reasoning that many in the Protectorate saw as a means of assuring the stability of French rule in Morocco.

To challenge concrete, advocates of steel-frame construction conjured a rival semiotics for their material of preference. In a piece from the early 1930s entitled "Steel and the Question of Skyscrapers," Lionel Nosmas presented the case for enhanced verticality in Morocco. A career colonial administrator, Nosmas was a regular contributor to public works journals in Morocco and Algeria. In the article, he offered a history of the advent of steel by Henry Bessemer in the mid-19th century, the gradual development of skyscrapers in the United States, and their eventual triumph over critics who attacked new vertical constructions on the basis of safety,

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[217] A. Surville, "L'opinion d'un entrepreneur casablancais sur la grand construction métallique," *Travaux publics*, May 7, 1932, no page numbers, E0810, AM. For a recent analysis of the Protectorate's use of Moroccan architectural styles in pursuit of "cultural authority" see Ashley V. Miller, "Tents, Palaces, and 'Imperial Souvenirs': Mobilizing Cultural Authority in the French Protectorate of Morocco," *The Journal of the Middle East and Africa* 9, no. 1 (January 2018): 51–75.

[218] Wright, *The Politics of Design in French Colonial Urbanism*, 85-160.

[219] A. Surville, "L'opinion d'un entrepreneur casablancais sur la grand construction métallique," *Travaux publics*, May 7, 1932, no page numbers, E0810, AM.

public health, and aesthetics.[220] After describing the "profound and organic beauty" of skyscrapers where "ornament and decor have been banished," Nosmas questioned whether "this beauty is not the one sought after by Muslim architecture in its pure and clean sobriety? Is it not fitting for the ardent luminosity [of Moroccan architecture] and the wide arteries that scientific urbanism has opened and multiplied in our large cities?"[221] Other advocates pointed out that the turn toward steel did not necessarily lead to fifty story American-style buildings marring Casablanca's skyline.[222] Instead, some architects contended that steel-frame constructions could be limited to twenty stories and adapted to the Neo-Moroccan aesthetic—citing, for example, projects in the Sidi Beylout neighborhood in Casablanca.[223] Other architects claimed that "Moroccan folklore can easily accommodate the construction of skyscrapers of differing heights….constructing vertical islands [while] disseminating low-level structures in the periphery and the countryside. This is, moreover, the character of contemporary indigenous cities."[224]

Steel, however, was not the only rival to concrete's rise in Casablanca. The material's place in the framework of Neo-Moroccan structures was also contested by a group of architects who—motivated in part by cement's continued scarcity—began to experiment with buildings requiring virtually no industrially produced components. During the 1930s and 1940s, Auguste Cadet in particular articulated a bold architectural vision that relied entirely on local construction

[220] Lionel Nosmas, "L'acier et la question des gratte-ciel," *Travaux publics et bâtiment au Maroc,* [undated manuscript] E0810, AM, 2-6.
[221] Lionel Nosmas, "L'acier et la question des gratte-ciel," *Travaux publics et bâtiment au Maroc,* [undated manuscript] E0810, AM, 7.
[222] Le journal général, "Devons-nous construire des gratte-ciel au Maroc?" *Travaux public*, December 4, 1931 [no page numbers], E0810, AM.
[223] Le journal général, "Devons-nous construire des gratte-ciel au Maroc?" *Travaux public*, December 4, 1931 [no page numbers], E0810, AM.
[224] René Roux, "Devons-nous construire des gratte-ciel au Maroc?" *Travaux public*, November 12, 1931 [no page numbers], E0810, AM.

materials and drew heavily on the methods and skills of Moroccan *muʿallimūn.* At the center of the Habous neighborhood—the new Moroccan residential area built to house residents overflowing Casablanca's original *madīna*—Cadet designed the Mahakama du Pacha which would not be completed until 1953.[225] Due to wartime shortages, the courthouse was conceived without cement or steel. Instead the structural work was carried out entirely with stone and mortar extracted from nearby quarries in Casablanca and the surrounding region.[226] *Muʿallimūn* from Fez and Casablanca provided tilework, carpentry, ironwork, and masonry for the project. The courthouse design was indicative not only of material scarcity, but also of a sociotechnical vision for proper relations between ranks within a colonial technical hierarchy. Cadet described the structure as a product of "direct collaboration between managers, artisans, and French and Moroccan workers…[realized] in a climate of cooperation and perfect professional harmony."[227] Unlike other architects of the period, Cadet foregrounded the contributions of Moroccan skilled workers while nevertheless claiming the task of conception and design for himself and his colleagues. The lack of both concrete and of French engineering expertise in Cadet's vision was also striking in a context of continued professional rivalry between the architects and engineers. In spite of such flagship projects and continued scarcity, concrete thoroughly dominated Casablanca's construction economy during and after WWII. If anything, Cadet's courthouse was an outlier by the postwar period as CIAM style modernism was beginning to reshape architecture and urban planning in the Protectorate. So hegemonic was concrete by this time that the Mahakama's singularity as a project was defined the very absence of industrial cement in the completed structure.

[225] Cohen and Elbe, 299.
[226] Auguste Cadet, *La Mahakma de Casablanca* (Paris: Hartmann, 1953), 16.
[227] Cadet, *La Mahakma de Casablanca*, 9.

Concrete's success in Casablanca was neither inevitable nor, from the perspective of certain communities of residents, desirable. Its place as the premier construction material in the Protectorate was not the result of clear technical superiority but rather a complex set of political factors. The development of a cement industry in Casablanca supported Lyautey's notions of rule through modernization while the technical specifications of the Roches Noires cement plant—down to the design of the original shaft kiln—rested upon rendering Moroccan labor cheap and unskilled. Despite preferences for concrete among metropolitan construction firms at the time, it would be a mistake to read the concrete's rise in Morocco as a simple a question of technology transfer. Some colonial engineers and even the French military complained bitterly about the qualitative and quantitative failures of Moroccan concrete—the composite of an unpredictable Moroccan environment and a supposedly suspect Moroccan labor force. Some Protectorate architects saw in steel a bolder vision for a modern Morocco while others such as Cadet suggested that local materials and methods—such as those used in the construction of the Mahkama du Pasha—could support both solid structures and forms of sociotechnical professional harmony under colonialism. Yet concrete triumphed over these alternative urban futures, due in part to how it enabled the management of colonial cities in "crisis." As the preferred "hygienic" material, concrete was intertwined with all of the major public health interventions in the city. It facilitated rapid urban expansion and higher elevations, but at the same time required close technical surveillance—by engineers especially—if collapses were to be avoided. In its very materiality—a concept which encompass not just the properties of an object but also the political and financial relations that *stabilize* it—concrete secured not just physical structures but also the role of urban experts as crisis managers. In other words, concrete was a technological means of securing the authority of engineers over Casablanca's built

environment—a means of restricting the technological agency of Moroccan builders and reigning in the speculative impulses of European settlers.

In some ways the early history of concrete under the Protectorate bears a resemblance to shifts in the construction economies of the U.S. and Europe during the late nineteenth and early twentieth centuries where concrete presented a means of deskilling labor, tightening professional hierarchies, and weakening the power of unions.[228] In Morocco, however, concrete also had a distinct role to play in allowing experts to navigate tensions at the heart of the colonial encounter between universality and particularity. Engineers understood the local labor force and the local environment in racialized terms, and these particularities were embedded within Moroccan concrete itself—a construction technology that behaved differently than metropolitan concrete. Yet making Moroccan concrete was also a way of transforming Morocco into a colonial possession where French engineering expertise, French capital, and French notions of hygiene and bodily autonomy could flourish. Concrete made Casablanca a space in which colonial modes of extraction, labor organization, and technical hierarchy appeared necessary to keep the city itself standing.

Ḥubus Property and Elite Protest

The responses of Casablanca's highly heterogeneous Muslim community to the expert alliance of crisis and concrete shifted over time. Periods of scarcity—whether of housing,

[228] Andrian Forty has gone to great lengths to explain the global impact of concrete's rise on politics, labor-relations, and cultural production. In the U.S. context, Amy Slaton has shown through fine-grained analysis how reinforced concrete construction, far from an inevtiable technological choice, was intertwined with a complex set of political projects and cultural agendas. Perhaps the earliest systematic critic of reinforced concrete was the Brazilian architect, Sérgio Ferro, whose efforts to integrate Marxist political economy with architectural history led to the conclusion that concrete had served as a "weapon" in capitalist efforts to deskill construction work. Adrian Forty, *Concrete and Culture: A Material History* (London: Reaktion Books, 2016); Amy E. Slaton, *Reinforced Concrete and the Modernization of American Building, 1900-1930* (Baltimore: Johns Hopkins University Press, 2001); Sérgio Ferro, "Concrete as Weapon" with an Introduction by Silke Kapp, Katie Lloyd Thomas, and João Marcos de Almeida Lopes, trans. Alice Fiuza and Silke Kapp, *Harvard Design Magazine* 46 (2018): i-33.

employment, or cement—rendered many Moroccan workers and artisans more directly dependent on the colonial municipal government or the various French companies active in the city. By the beginning of the 1930s, many Moroccan residents had gained access to cement for the construction and maintenance of their homes and businesses, whether through administrative channels, the formal market, or the black market. Structures built in Moroccan neighborhoods using concrete—but that subverted or eschewed the permitting process entirely—were a source of perpetual concern for colonial inspectors. Unlike *bidonvilles,* neighborhoods such as Derb Ghallef, occupied an intermediary position between permanence and impermanence, with homes that were durable but often illegally constructed [Chapter 2]. The following chapter examines in more detail how Moroccan residents negotiated colonial systems for the distribution of cement and other resources that were essential for maintaining and reshaping the built environment. This section considers how local Casaouis responded to colonial attempts to manage the city through invocations of return, acts of refusal, and alternative visions of materiality that revolved around *ḥubus* property. Like the 1934 Plan de Réformes, the protest movement that developed in Derb Ghallef in the spring of 1934 cast France's presence in Morocco—more specifically French management of religious endowments—as itself a sort of crisis, one with material implications.

Contests over the management of religious endowments (*ḥubus*) took place during a moment of heightened political unrest initiated by popular and elite responses to the Berber Dahir in 1930. Over the course of the 1930s, Muslim notables mobilized notions of equitable maintenance and proper provisioning to criticize France's material neglect of Islamic affairs. For some Moroccan nationalists, French rule itself constituted a kind of ongoing, permanent crisis, and yet few called for the outright dissolution of the Protectorate during this period. Merchants and notables who participated in a protest movement against the Habous Administration in

Casablanca encountered the same urban conditions as French technicians. Yet, in their appeals to the Sultan and the central government, these locals framed scarce housing, high rents, and the delay of infrastructural attachment for Muslim neighborhoods as a distinct type of crisis: a matter of protecting Islamic practice in Morocco from corruption and decay.

Following the founding of the Protectorate in 1912, the new French administration had begun the process of adapting Morocco's existing property system to suit the needs of colonial governance. As part of this process, the French administration effectively annexed all *ḥubus* property—or *awqaf* as it is commonly referred to outside of the Maghrib. Prior to the founding of the Protectorate, revenues generated through *ḥubus* property had been devoted to the maintenance of mosques and public services such as bath houses (*ḥammām*). Through a series of administrative reforms over the course of the nineteenth century, the *makhzan* had gradually taken over the management of such properties. Under the Protectorate, the Ministry of Religious Endowments was responsible for building, maintaining, and repairing the country's mosques as well as leasing properties and generating the revenue to do so. Colonial Casablanca contained a great deal of *ḥubus* property ostensibly managed by a Moroccan official, the Nadir des Habous.[229]

During the city's construction boom, the Nadir leased a significant portion of *ḥubus* land to European speculators.[230] One such speculator, a wood merchant named Domerc became infamous for the structures he built on a *ḥubus* tract along the road toward Mediouna. The substandard nature of this housing as well as the fact that it protruded into a public thoroughfare drew the ire of the local French press and eventually the municipality who threatened to evict

[229] Cf. Holden's description of *ḥubus* construction and revenue generation in Fez. Holden, *The Politics of Food,* 96.
[230] Amster, 114.

Domerc.[231] Such abuses were enabled by the unique status of the Habous Administration. Until the mid-1930s, the city's zoning restrictions had been only irregularly applied to *ḥubus* property—thus the highly favorable leasing arrangements with the Nadir also enabled speculators in some cases to avoid these regulations entirely.[232] Casablanca's local Habous Administration also boasted its own architectural service that constructed apartment buildings and rented them out for profit.[233] The largest project undertaken by the administration was the creation of a new indigenous residential district to the south of the city center, which became known as the Habous neighborhood. Cadet and Brion were the chief architects of a project originally conceived by Albert Laprade in 1917 and largely completed over the course of the 1920s and 1930s. During the neighborhood's construction, Cadet was embroiled in multiple disputes with Casablanca's municipality which declined to provide funding for water, road, and sewer connections for the new neighborhood. Even when the Habous Administration took on the cost of infrastructure building, Cadet had to negotiate with the municipality for the right to connect the development to the city's water grid.[234] At a time when the notion of providing low-cost housing for Muslim residents was still alien to many Protectorate officials, Casablanca's Habous administration was already doubly implicated in managing the precarious living conditions of the city's Moroccan population. Both a provider of public services and one of the city's largest landlords, the administration was on the front line of conflicts over the inequitable distribution of resources and infrastructural attachments in the colonial city.

Muslim residents of Casablanca worked to politicize both facets of the Habous

[231] Verax, "La hernie Domerc," *Presse marocaine,* January 6, 1932 [no page number], E0810, AM.
[232] Verax, "La hernie Domerc," *Presse marocaine,* January 6, 1932 [no page number], E0810, AM.
[233] Service d'architecture des biens habous Casablanca, "Avant projet d'une mains de rapport à construire sur le terrain habous Boulevard de la Gare," July, 5, 1918, H63, AM.
[234] Office of Auguste Cadet to Chef du Service du contrôle des habous, June 26, 1923, H0032, AM; Office of Auguste Cadet to Chef du Service du contrôle des habous, April 20, 1923, H0032, AM.

Administration, its inadequate upkeep and abusive rental practices.[235] In the aftermath of the popular mobilization that followed the issuing of the Berber Dahir in 1930, nationalists insinuated that official disregard for the *ḥubus* affected the nature of Islamic practice in Morocco in general, a critique reinforced by the regular complaints of the faithful about the state of publicly managed religious establishments.[236] Residents of Casablanca complained about the difficulties of obtaining written leases from the administration and about the scarcity of prayer mats provided at local mosques.[237] Water consumption in particular took on an explicitly political character for Protectorate officials, who worried about providing infrastructural attachments and assuring that mosques were equipped with adequate water supplies for ablutions. Municipal officials in Casablanca produced reports calculating the exact quantities of water required for ritual ablutions and surveying the different mechanisms in place for servicing the city's mosques.[238] With many local religious establishments still relying on wells and buckets at the end of the 1930s, mosque-goers increasingly demanded attachments to water and electricity grids—requests that administrators could hardly ignore given growing protest over French involvement in Islamic affairs.[239]

In the spring of 1934, popular dissatisfaction with the Ministry of Religious Endowments dovetailed with the increasing presence of Moroccan nationalists in Casablanca. A movement against the local Habous administration—lead primarily by Moroccan notables and merchants

[235] Since the beginning of the Protectorate, renters of *ḥubus* property organized individual and at times collective appeals to protest excessive rents or to assert their rights to *manfa'* (ownership or benefit) based on prolonged occupancy. Nadir of Casablanca to Service du contrôle des habous, n. 912, Safar 2, 1335 [November 28, 1916], H093, AM.
[236] Conseiller du Gouvernement chérifien to Commissaire du Gouvernement chérifien, "Habous de Casablanca," May 19, 1934, 11MA/900/922, CADN.
[237] Conseiller du Gouvernement chérifien to Commissaire du Gouvernement chérifien, "Habous de Casablanca," May 19, 1934, 11MA/900/922, CADN.
[238] Contrôleur Civil, Chef du cercle de Chaouia-Sud to Contrôleur Civil, Chef de la région de Casablanca, "Alimentation en eau des mosquées," April 1, 1938, 11MA/900/922, CADN.
[239] Contrôleur Civil, Chef du cercle de Chaouia-Nord to Contrôleur Civil, Chef de la région de Casablanca, "Alimentation en eau des mosquées," April 6, 1938, 11MA/900/922, CADN.

who had moved from Fez to Casablanca—sought to channel widespread anger over its rental practices and neglect of maintenance and repair work. One leader of the campaign, Ahmad al-Hajwi who worked as a salesman at the customs house, was a nephew of the reformist scholar and Minister of Education, Muhammad al-Hajwi as well as a member of the Jeune Marocain movement.[240] Another well connected supporter was Saʿid al-Harizi, a British protégé. ʿAbd al-Majid Bennis and Muhammad bin Ahmad al-ʿAlami were both well-established Fassi merchants, although French officials described the rapidly collapsing business of the former.[241] Perhaps the primary leader of the movement was Muhammad al-ʿAlami (not to be confused with Muhammad bin Ahmad al-ʿAlami), a well-known sharif, who was also a jurist, a grain merchant, and a public scribe.[242] Muhammad al-ʿAlami rented a storefront in a *ḥubus* building and had himself been engaged in multiple disputes with the Nadir. While Muhammad bin Ahmad al-ʿAlami organized his fellow merchants at the local *qissaria* owned by the administration, the sharif al-ʿAlami appealed to other Muslim residents in the new *madīna* to sign a petition demanding the construction of much larger mosque in the neighborhood.[243] The current mosque reportedly could not accommodate even half of the faithful on Fridays.

Like other nationalist protest movements of the period, these critics of the Habous Administration first lodged their complaints in the form of a petition to the Sultan, signed by

[240] Chef du Service du contrôle-vivil de Casablanca to Conseiller du Gouvernement chérifien, "Habous de Casablanca," May 8, 1934, 11MA/900/922, CADN; For one account of the Jeunes Marocains from the period see Robert Montagne, “La crise nationaliste au Maroc,” *Politique étrangère* 2, no. 6 (1937): 535–62; See also Mohamed Echaoui, “Bourgeoisie citadine et mouvement national marocain dans les années 1930,” *Cahiers de la Méditerranée* 46, no. 1 (1993): 173–89.
[241] Chef du Service du contrôle-civil de Casablanca to Conseiller du Gouvernement chérifien, "Habous de Casablanca," May 8, 1934, 11MA/900/922, CADN.
[242] Colonial records on the rent strike appear to have confused the roles of Muhammad bin Ahmad al-ʿAlami and Muhammad al-ʿAlami at certain times. It appears that both were leaders of the rent strike, but it is difficult to ascertain from municipal documents which individual was involved in precisely which action. Chef du Service du contrôle-civil de Casablanca to Conseiller du Gouvernement chérifien, "Habous de Casablanca," May 8, 1934, 11MA/900/922, CADN.
[243] Contrôleur Civil, Chef des Services municipaux de Casablanca to Contrôleur Civil, Chef de la région des Chaouia, April 16, 1934, 11MA/900/922, CADN.

over a thousand residents.[244] Their grievances were two-fold. First, they accused the Nadir—and by extension the French—of operating the *ḥubus* as a commercial venture rather than a religious one, with insinuations that he profited personally while allowing the city's mosques to fall into a state of disrepair. Furthermore, the movement cited the plight of residents on *ḥubus* property who were subject to excessive rents. In evaluating these demands, French officials admitted that among the six hundred or so buildings administered by the Nadir, twenty seven remained entirely empty in spite of the high demand for housing in the city.[245] The core grievance, however, was the very fact that the French controlled the *ḥubus* in the first place.[246] As the movement progressed over the course of the spring of 1934, it gradually took the form of an organized rent strike against the administration. Large numbers of merchants and residents leasing *ḥubus* property simply refused to deliver their monthly payments to the Nadir. As a spokesperson for the movement, the sharif al-ʿAlami claimed that if rents were not reduced he would personally be forced to abandon his lease entirely.[247] As tensions mounted over unpaid rent, official fears about the further escalation of the conflict led the Nadir to seek the central government's intervention rather than simply evicting the strikers.

French officials in Casablanca viewed the protest movement and the strike largely as a product of nationalist agitation. To dampen further mobilization, the Protectorate's central government introduced a process of adjudication for individual renters who considered their

[244] Conseiller du Governement chérifien to Commissaire du Gouvernement chérifien, "Habous de Casablanca," May 19, 1934, 11MA/900/922, CADN; Contrôleur Civil, Chef des Services municipaux de Casablanca to Contrôleur Civil, Chef de la région des Chaouia, April 16, 1934, 11MA/900/922, CADN.
[245] Chef du Service du contrôle-civil de Casablanca to Conseiller du Gouvernement chérifien, "Habous de Casablanca," May 8, 1934, 11MA/900/922, CADN.
[246] Contrôleur Civil, Chef des Services municipaux de Casablanca to Contrôleur Civil, Chef de la région des Chaouia, April 16, 1934, 11MA/900/922, CADN.
[247] Contrôleur Civil, Chef des Services municipaux de Casablanca to Contrôleur Civil, Chef de la région des Chaouia, April 16, 1934, 11MA/900/922, CADN.

leases excessive where claims would be evaluated on a case by case basis.[248] To investigate the state of mosques managed by the administration, the French proposed dispatching Muslim agents of Casablanca's governor to inspect local religious establishments and propose necessary changes.[249] The first measure sought to disrupt the collective nature of the rent strike while the second attempted to reduce the maintenance of mosques to a technical question. Both responses obfuscated the anti-colonial impetus behind the movement.

In their critiques, the leaders of the rent strike invoked notions of proper conduct, piety, and a return to a precolonial urban social contract. While French observers attempted to distinguish the question of fair rental practices from the upkeep of mosques and the overall state of Islamic practice in Casablanca, Moroccan nationalists insisted that these concerns were one in the same. The demand that local mosques be well maintained and accessible to all believers was inseparable from the assertion that housing should be available at a reasonable cost despite the fluctuations of the urban property market. The notion that religious endowments could be managed for profit rather than as a public good, appeared to protesters as deeply impious—a sign that French involvement in Islamic affairs had begun to corrupt religious practice in Morocco in general. The presence of a sharif like Muhammad al-ʿAlami at the forefront of the movement raised questions of piety and descent—throwing into sharp contrast the illegitimacy of a French administration that claimed to preserve and protect Islam in Morocco. At the same time, the Fassi origins of the movement's leaders and their connections to high-ranking Moroccan officials such as Muhammad al-Hajwi gave the protest an indisputably elite character. The place of British and American protégés among the strike's members further complicated French attempts to deal with

[248] Conseiller du Governement chérifien to Commissaire du Gouvernement chérifien, "Habous de Casablanca," May 19, 1934, 11MA/900/922, CADN.
[249] Conseiller du Gouvernement chérifien to Commissaire du Gouvernement chérifien, "Habous de Casablanca," May 19, 1934, 11MA/900/922, CADN.

the conflict. These characteristics produced a movement well versed in navigating both the French and Moroccan bureaucracies of the Protectorate—of winning small concessions but not of fundamentally altering the ways that *ḥubus* properties were managed and maintained.

Toward the end of the 1930s and especially during WWII, the question of how mosques and other religious institutions were maintained and repaired became entwined with a colonial system for controlling the distribution of resources and materials such as industrial cement. This system for managing the "flow" of cement will be the subject of the following chapter. The significance of the brief rent strike of 1934, however, and the reason I chose to juxtapose it with the expert alliance of concrete and crisis concerns the ways that both sets of actors linked matter and agency to assert authority over the colonial city. While colonial technicians used vertical shaft kilns and neo-Moroccan aesthetics to link together epidemic, scarcity, speculation, and unrest through the label of crisis, urban middle- and upper-class Muslims in Casablanca engaged in their own practices of conjoining. Acts of petitioning, refusing, and mobilizing the precolonial past brought Islamic practice and piety, the maintenance of particular, *public* materialities, fair rent and access to housing, and the daily injustices of the colonial situation together into the same frame.

Conclusion

During the first two decades of the Protectorate, Lyautey's peculiar modernizing vision, the influx of European and rural Moroccan migrants to Casablanca, and conditions of ongoing scarcity—whether of housing, cement, labor, or employment—set the stage for a series of clashes during the 1930s. In the Protectorate as a whole, nationalist responses to the Berber Dahir and military campaigns of rural pacification engendered a "political field" that revolved

around questions of "religion, ethnicity, territory and the role of the Alawid monarchy…."[250] During this period in Casablanca, the definitions of urban crisis that French experts invoked remained in flux. Questions about what could be included under the label of crisis and of whether crisis was indeed the appropriate label at all remained open to contestation. As urban Moroccan notables and European settlers tested their political strength, the mostly French professional communities of engineers and architects were a long way from exercising an exclusive right to define the city's problems or propose solutions. These were not, however, simple rhetorical stances. They were backed by expert investments in particular forms of materiality—forms bound up with industrial processes, technical hierarchies, and colonial labor regimes. Stabilizing a political field in Casablanca was also a matter of making concrete Moroccan and of inserting Moroccan concrete along with the social and political relations supporting it into every facet of urban life.

It is tempting to understand concrete's place at the center of Casablanca's modernizing construction industry as an inevitable result of its technological affordances—the speed, stability, and security it enabled in a rapidly expanding urban environment. It might be equally enticing to read concrete's rise as a result of its symbolic entanglement with the dichotomizing visions of modernity at the heart of the French colonial project in Morocco. The aim of this chapter, however, has been to suggest that what came to define concrete construction during the early years of the Protectorate—both its precise materialities and symbolic resonances—was its imbrication with expert understandings of urban crisis. Concrete lay at the constantly shifting point of contact between calculable and incalculable forms of indeterminacy, between risk and uncertainty.[251] Risks of corrosion and collapse could be measured and estimated by engineers in

[250] Wyrtzen, *Making Morocco,* 4.
[251] Roitman, 74.

Casablanca but real estate speculation, a cheap but transient labor force, a poorly understood Moroccan environment, and the on-the-ground technological practices of locals all made Moroccan concrete subject to forms of fundamental uncertainty. As the following chapter will show, anxieties over the use and abuse of concrete—as well as the ambiguous flows of industrial cement—extended into the slum removal campaigns of the late 1930s and of the postwar period, bringing with them forms of circulation and technological labor that were fundamentally disruptive to the ambitions of modernist urbanism and colonial engineering in Morocco.

CHAPTER 2

VIOLENT MATTER

AND THE CRISIS OF POSTWAR MODERNIST PLANNING

On the eve of Morocco's independence in November 1955, an article appeared in the journal *Construire*—the leading publication for members of the building industry—on the evolution of cement production during the Protectorate. Given its status as "the foundational material for the building trades and for public works, the premier industries of a new country" and a core "economic indicator," cement production, Morocco's "oldest local industry," was a source of anticipation and anxiety for investors, administrators, and urban professionals.[252] After over a decade of scarcity and the recent opening of factories in Meknes and Agadir to supplement supplies from the main plant in Casablanca, Morocco was on the verge of becoming a self-sufficient producer of cement at the very moment it would gain autonomy from France.[253] Initially a consequence of wartime shortages, cement's scarcity during the postwar period resulted from a program of rapid infrastructure building and housing construction spearheaded by the Protectorate's modernist planners—most notably Michel Écochard. Industrial cement was the key ingredient for mixing concrete—an essential material for erecting durable housing

[252] Marc Bonnet, "Le ciment au Maroc," *Construire*, November 12, 1955, 815.
[253] Bonnet, 819.

projects, apartment buildings, utility poles, and subterranean pipes. For the article's author, cement was the substance responsible for securing the spaces, structures, and nodes upon which urban modernity was meant to rest. The article appeared in *Constuire* one day before Sultan Muhammad V's return from exile in Madagascar, the event that would definitively signal the downfall of the Protectorate. In this context, Morocco's autonomy in the realm of cement production signified the possibility of providing durable forms of life to urban Moroccans, of extending the promises of modernity beyond the European city-dwellers who had been its main beneficiaries during the colonial period.

This chapter examines the material foundations of postwar modernist urbanism. It analyzes the practices, arguments, and assumptions that channeled industrial cement into particular sites and projects in Casablanca during and after WWII. Cement flowed in ways that appeared both necessary and threatening to French officials. The flow of cement was symbolically tied to visions of a modern, colonial city cast in concrete as well as to anxieties about the position and agency of Moroccans within this city. Cement that passed through the proper administrative channels could be a tool for securing political assent and winning over local notables, while cement that moved too freely could enter the black market, exceeding the regulatory capacities of the state. If cement failed to flow, as in cases of hoarding, construction could stagnate, rents rise, and disorder erupt. And yet, the process of circulation must at some point cease for cement to become concrete, durable housing, secure forms of dwelling. For the Protectorate state, the flow of cement was more than just a logistical or administrative problem. Where, how, and for whom cement became concrete shaped the politics of urban life in postwar Casablanca.

The "archive" for cement and its circulation, however, is fragmentary—composed of

scattered administrative accounts, technical reports, and the physical remnants of Protectorate-era construction projects. As a method and reading strategy, I have tried to attend to points of rupture within this archive—moments when the network for distributing cement broke down.[254] Analyzing accounts of these "failures," I link together anti-colonial violence, debates over matter, and the imagined futures of modernist planning in Morocco's largest city. I argue that the distribution of cement within institutions, work sites, housing projects, poles, sewers, and roads embedded practices of neglect, segregation, and clientism into Casablanca's urban environment. At the same time, the flow of cement constantly exceeded the boundaries that Protectorate officials attempted to erect—creating sites of possibility that disrupted colonial policies and categories.

Protectorate-era systems for rationing scarce materials built upon the notion of "crisis" elaborated during the early years of the Protectorate [Chapter 1]. By the 1940s, "crisis" had become the byword of nearly all French urban interventions in Morocco. It referred to a particular way of distributing resources, of allocating access to technology, and of arranging urban natures. The "crisis" of postwar Casablanca was itself a product of modernist planning in at least two senses. First, as a category, crisis served to delimit Morocco's urban problems, suggesting they could be resolved through technological solutions. It defined conceivable kinds of urban intervention. Second, as a set of practices, crisis involved rearranging forms of vulnerability, authority, and agency in the colonial city—determining whose homes would be demolished, rebuilt, or connected to water and electricity grids. During the interwar years, crisis

[254] I understand "breakdown" as the failure to stabilize a working technology through acts of maintenance and repair. That said my emphasis in this chapter is less on how exactly the system for distributing cement broke down and more on what else—colonial categories, modernist imaginaries, etc.—broke alongside this network. Steven J. Jackson, "Rethinking Repair," in *Media Technologies: Essays on Communication, Materiality and Society*, ed. Tarleton Gillespie, Pablo Boczkowski, and Kristen Foot (Cambridge, Mass.: MIT Press, 2014).

served as a way of carving up the colonial city between different categories of experts [Chapter 1]. While this remained the case in the postwar period, the concept took on additional meanings. During a series of urban experiments in Casablanca inspired by Le Corbusier and the principles of the Athens Charter, crisis came to designate an approach to urban life that positioned culture and society on one side of the equation, the economy on the other.[255] In theory and practice, the problem for urbanists and administrators was how to mediate between a colonial society with its frictions and tensions on the one hand and a colonial economy with its budgetary constraints and limitations on the other.[256] These experts put forward the notion that construction technologies were the means of mediation between these two poles and matter itself the domain for intervention. Scholars of postwar planning in the Protectorate have focused on the conflicts provoked by the country's chief urbanist, Michel Écochard, his new functionalist plan for Casablanca, the transition to linear industrial organization, and extension of municipal boundaries to accommodate new zones for Moroccan housing.[257] Écochard's interventions initiated a new phase in Morocco's urban history. At the same time, they built upon rather than displacing notions of crisis that were materially embedded in the structures and infrastructures of

[255] I am suggesting here that Paul Rabinow's discussion of the discursive origins of "society" as a "cultural object" needs to be examined in relation to Timothy Mitchell's arguments about the invention of "the economy." The two domains were invented, imagined, constructed in relation to one another. In Morocco, crisis—the arguments and practices associated with it—was the vehicle for this co-construction. Paul Rabinow, *French Modern: Norms and Forms of the Social Environment* (Cambridge, Mass.: MIT Press, 1989), 11; Timothy Mitchell, "Fixing the Economy," *Cultural Studies* 12, no. 1 (1998): 82–101.

[256] Rabinow's discussion of what he terms the "middling modernism" of interwar French "social technicians" refers to a tendency to see social norms and forms as unbound by culture or history and open to sociotechnical intervention. I see this process working differently in the postwar years. Not only did planners and officials not do away with the notion of cultural limits for Moroccan inhabitants, they linked cultural difference to political economic arguments about managing scarce resources. Planners imagined that social norms and forms could be transformed but only against the backdrop of colonial economy and its supposed constraints. Paul Rabinow, *French Modern,* 13.

[257] See Jean-Louis Cohen and Monique Eleb, *Casablanca: Colonial Myths and Architectural Ventures* (New York: The Monacelli Press, 2002); Abderrahmane Rachik, *Casablanca: L'urbanisme de l'urgence* (Casablanca: Imprimerie El Jadida, 2002). More recent scholarship has pointed to the changing valence of present-day heritage discourse that encompasses Écochard's programs. See Karim Rouissi, "Housing for the Greatest Number: Casablanca's Underappreciated Public Housing Developments," *The Journal of North African Studies* (November 2019): 1–26.

colonial Casablanca.

Postwar housing and infrastructural projects cannot be understood outside of their relationship with urban violence. Sociologist Abderrahmane Rachik has correlated the two major shifts in Casablanca's urbanism—Écochard's 1952 plan and the Schéma Directeur of 1981—with two of the largest popular uprisings in the city's history.[258] For Rachik, the outbreak of violence did not so much initiate new thinking within Morocco's urban planning agencies or compel planners to focus exclusively on security in the elaboration of new forms. Rather violence placed the implementation of new urban strategies within a distinct temporal frame—a "crisis" urbanism of rapid intervention.[259] Violence also operated as a kind of heuristic for planners and officials—a means of estimating the gap between the state's vision of cultural difference or urban society and the dynamic realities of city life. The final section of this chapter considers the violence of the December 1952 uprising in the Carrières centrales neighborhood of Casablanca as a foil to the modernist fantasies of a colonial city cast in concrete—where otherwise carefully managed stocks of materials were briefly enrolled into an insurrectionary project.

The violence of the Protectorate's urbanism was also multiple. Colonial and anti-colonial violence against persons took place within the distinctly "violent environment" of postwar Casablanca—a space of dust and demolitions, of infrastructural and bodily neglect, of asymmetrical exposure and vulnerability.[260] Following the flow of cement from concrete pipes and collapsed homes into the cinder blocks thrown by protesters during the 1952 uprising, this chapter will propose a new frame for thinking about colonial violence that links together

[258] Abderrahmane Rachik, *Casablanca: L'urbanisme de l'urgence* (Casablanca: Imprimerie El Jadida, 2002), 89.
[259] Rachik, 89.
[260] Nancy Lee Peluso and Michael Watts, eds., *Violent Environments* (Ithaca: Cornell University Press, 2001), 5.

violence "fast" and "slow."[261] By shifting attention from the flagship projects and policies that modernist planners and architects pioneered at the end of the 1940s to the seemingly mundane conflicts over housing that characterized the tenure of the Sharifian Housing Office (OCH), this chapter renders visible the violent arrangements of matter that undergirded French urbanism in Morocco. As the first administrative entity responsible for both Moroccan and European housing, the OCH offers a case for thinking about how the boundaries of urban segregation became a matter of matter itself—shaping distributions of authority and vulnerability across Casablanca's divided landscape.

The OCH and Cement's Uneven Flow

The Second World War initiated a series of profound disruptions within the Protectorate state and in Moroccan urban politics more generally.[262] A Vichy administration, installed after 1940, remained in power after the U.S. occupation until being eventually dislodged by the Gaullists in 1943. 1944 witnessed the emergence of a re-invigorated nationalist movement in Morocco which shifted its core leadership from the old imperial capital of Fez to the new administrative center in Rabat.[263] The growth of nationalist and communist political organizing during the postwar period inspired a two-pronged program of development. In urban areas, Michel Écochard's appointment as the head of urban services in 1946 signaled a shift in state housing policy toward expanded infrastructure building, low-cost housing construction for Moroccans, and systematic slum clearance. Also in 1946, the Resident General Eirik Labonne

[261] Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, Mass.: Harvard University Press, 2011).
[262] For a detailed discussion of the influence of both German and U.S. involvement during the war on Morocco's political class see Jamaâ Baida, "The American Landing in November 1942: A Turning Point in Morocco's Contemporary History," *The Journal of North African Studies* 19, no. 4 (August 2014): 518–23.
[263] Susan Gilson Miller, *A History of Modern Morocco* (Cambridge: Cambridge University Press, 2013), 145.

initiated a massive program of rural "modernization" that aimed to establish agricultural cooperatives in the countryside, in part with the aim of slowing the mass migration into Moroccan cities.[264] The adoption of modernization as the mantra of the colonial administration in Morocco paralleled similar strategies elsewhere in the French and British Empires.[265] In the domain of urban housing, the Sharifian Housing Office formed the link between policies of outright neglect during the interwar period and Écochard's modernism. The Office's efforts to shape the circulation of materials provide a means of understanding how the logics of the later came to be built into the projects of the former.

Created by royal decree in June of 1942 in response to the influx French families into Moroccan cities, the Sharifian Housing Office (Office chérifien de l'habitat) was initially responsible for the construction and maintenance of European housing in the Protectorate.[266] The OCH's mission was to coordinate between multiple types of circulation that took place at varying temporalities: the production of construction materials, private investment in the urban property market, and in-migration to Casablanca and other cities. Michel Écochard would later criticize the Office for failing to carry out a single study or to produce a comprehensive plan during its early years.[267] Nevertheless, the OCH built and built rapidly. During the first two years of its existence, the Office erected some 344 structures—a mixture of villas, chalets, and multi-story apartment buildings—in Casablanca alone.[268] Given its relatively small staff and budget, this accelerated rhythm stemmed in part from the use of incarcerated laborers to carry out much of the actual construction work prior to 1944.[269] The OCH's main task with regard to European

[264] Miller, *A History of Modern Morocco*, 146-147.
[265] See for example Frederick Cooper and Randall M. Packard, eds., *International Development and the Social Sciences: Essays on the History and Politics of Knowledge* (Berkeley: University of California Press, 1997).
[266] The June 24, 1942 *dahir* defined the OCH as an institution for providing European housing.
[267] Michel Écochard, "L'habitat au Maroc," [undated, circa 1952] 1MA/10/131, CADN, 1.
[268] Compte-Rendu, Section locale de Casablanca, Office chérifien de l'habitat, October 1944, A1410, AM.
[269] Conseil d'administration de l'Office chérifien de l'habitat, "Rapport sur l'exercice 1948," E0815, AM;

housing was to provide lodging for state employees working in the Protectorate. This it did under constant criticism of incompetence and mismanagement. Many of Protectorate's functionaries, from low-level administrators to primary school teachers, complained vehemently about the low-quality prefabricated villas that OCH supplied during the 1940s. In one extreme case, a disgruntled teacher named Helmbacher, who worked for the Public Education Administration, forced the lock of an unoccupied villa owned by the OCH and began squatting there.[270] In another instance, the OCH petitioned to evict a group European functionaries who had occupied a school in Aïn Sebaâ.[271] European tenants also challenged the OCH when they considered rents disproportional and in many cases refused to pay the Office entirely.[272] In 1949, a draft of an OCH report noted that "The European is a more difficult tenant than the native [crossed out to say 'the Moroccan']. He sometimes does not want to pay his rent because this or that accessory is missing from the accommodation, because there are minor repairs to be done, etc…."[273] In Casablanca, European residents also formed a tenants union that proved successful at resisting the OCH's rent increases.[274]

Following its expansion into the domain of "indigenous housing" in the summer of 1944, the OCH embarked on a search for Moroccans to sit on each of its regional bodies. A debate occurred within the administration over the ideal type of subject to enroll in the office's housing committees. While officials agreed that each committee should be composed primarily of urban

[270] Directeur de l'instruction publique to Secretaire Général du Protectorat, "Rabat-Ageudal-Villa Rue du Commandant Toussaint," June 4, 1949, E0818, AM; Helmbacher to Directeur de l'instruction publique, May 3, 1949, E0818, AM.
[271] Directeur de l'intérieur, "De l'explusion de MM. Curt, Herisson, Menissier et autres occupants de l'École d'Aïn Sebaa (Casablanca)," July 23, 1949, E0818, AM.
[272] Milan to Secretaire Général du Protectorat, April 11, 1949, E0818, AM; Conseil d'administration de l'Office chérifien de l'habitat, Section de l'habitat européen, June 10, 1949, E0815, CADN, 42-43.
[273] Conseil d'administration de l'Office chérifien de l'habitat, Section de l'habitat européen, June 10, 1949, E0815, AM, 43.
[274] Conseil d'administration de l'Office chérifien de l'habitat, Section de l'habitat européen, June 10, 1949, E0815, AM. 43.

notables—from representatives of the local pasha and members of the municipal commission to Moroccan members of chambers of commerce and industry—the administration remained divided over the question of whether or not to recruit participants from the urban working classes, the artisan community, and the construction industry. French officials framed the inclusion of Moroccan members as essentially a question of expertise. Local notables with a more nuanced understanding of the social and religious dynamics of inhabitation could help the administration avoid potential conflicts with the Muslim community. OCH officials also expected Muslim notables to contribute financially to the construction of Moroccan housing—projects for which they claimed it was more difficult to attract private investments.[275] French attempts to seek out working class representatives to sit on these committees reflected a different set of priorities. On the one hand, they were clear examples of colonial practices of divide and rule. At the same time, these efforts reflected official doubts about the degree of influence notables collaborating with the French administration were able to exercise over local laborers and artisans, especially in Casablanca where immigration from other regions of Morocco was the highest.

One of the most striking inclusions on Casablanca's OCH committee was Abdelkader ben Tounsi (ʿAbd al-Qadir ibn al-Tunisi). A local *muʿallim* in his fifties, ben Tounsi resided in Casablanca's medina and was apparently well known to the administration.[276] He had been involved in several construction projects for the Habous Administration and for private individuals on his own account. Ben Tounsi also worked under the French architects Edmond Brion and Auguste Cadet, most likely as an artisan during the construction of the Pasha's

[275] Conseil d'administration de l'Office chérifien de l'habitat, "Rapport sur l'exercice 1948," E0815, CADN, 2.
[276] Capitant to Directeur des Affaires politiques,"Composition de la section locale de l'habitat indigène," December 5, 1944, A1410, AM.

Courthouse in Casablanca, one of the most publicized projects of the period.[277] Another local representative, Abdellah ben Kaddour (ʿAbd Allah ibn Qaddur) was a worker in the construction industry, chosen for his military service. This inclusion of working-class Moroccans on the OCH committees seems to have been particular to Casablanca. In other municipalities from Fez to Fedala, officials claimed that no reliable individuals from the laboring and artisan communities could be located, and their committees included only notables from the municipal councils or the chambers of commerce. Responding to a directive from Rabat, the contrôleur civil in Oujda doubted that "we will be able to find individuals among the workers cultivated enough to usefully collaborate in the committees work."[278] While mainly in practice in Casablanca, the possibility of capturing the intellectual as well as the manual labor of Moroccan workers with intimate knowledge of the construction industry held promise for the officials shaping the OCH's institutional structure.

In addition to planning and managing state-financed housing projects, the postwar OCH also took responsibility for examining requests for construction permits.[279] Both Moroccan and European property owners were subject to the Office's directives, which required applicants to demonstrate their proposed projects' contributions to resolving the housing crisis. OCH committee meetings frequently referred to the scarcity of construction materials as a major cause of the postwar housing crisis and one of the prime reasons for the extent of the state's involvement in construction. Committees examined plans submitted by Moroccan contractors and property owners to ensure that they used only minimal quantities of wood or cement. As a branch of Public Works Administration, the OCH controlled reserves of essential materials—

[277] Capitant to Directeur des Affaires politiques,"Sections locales de l'habitat," February 28, 1945, A1410, AM.
[278] Mirande to Directeur des Affaires politiques, "Office chérifien de l'habitat," December 30, 1944, A1410, AM.
[279] It is not clear if the OCH was the only branch of the administration responsible for doing this during its existence.

cement in particular, but also the iron and steel bars necessary for reinforced concrete construction—which it could distribute to projects in line with the Office's vision. This network for material distribution enabled the OCH to speed the completion of projects deemed politically useful.

The Office aimed to ensure the smooth flow of cement in the face of barriers that were at once technical, legal, and infrastructural. Prior to WWII, roughly a quarter of the cement consumed in the Protectorate was imported.[280] These imports slowed with the onset of the war, then ceased entirely in 1942 while the demand for cement continued to increase.[281] As producers began to feel the effects of wartime scarcity in 1940, the CCM sought to shore up their stocks of raw materials to secure a steady rate of output. Scarcity failed to displace cement's centrality to the Protectorate's housing vision. In Casablanca, the Office's director, Milan, bluntly stated that "other than stone we must not count on local materials. There aren't any."[282] For officials, neither local bricks nor wood could come anywhere near satisfying the needs of an already sluggish construction industry. It soon became clear, however, that distribution constituted as much of an obstacle to the smooth flow of cement as production. Access to paper sacks—once imported from Belgium and the Scandinavian countries—as well as burlap from Calcutta, dried up with the onset of the war.[283] With no reliable substitute for these burlap sacks, the Public Works Administration attempted to institute a rental system in which consumers would be taxed for the use of sacks until they returned them to the original manufacturer.[284] After a few exchanges,

[280] Bonnet, 816.
[281] Bonnet, 815.
[282] Robert Veron and André de Lattre, "L'enquête effectuée à l'Office chérifien de l'habitat," Annex II, Inspection générale des finances, March-April 1948, E0817, AM, 52-2.
[283] Comité centrale des industriels du Maroc, "Resumé des réponses reçues de l'industrie de la cimenterie," undated [1940], 11MA/900/905, CADN.
[284] Normandin, "Circulaire N 506 quater T.P. de la direction des communications de la production industrielle et du travail," cited in Organe officiel du groupement interentreprise, *Annuaire du bâtiment et des travaux publics* (Casablanca: Éditions Réalisations; Maroc-Presse, 1942), 30.

however, the burlap would wear and tear, degrading beyond the point of reuse. To avoid the tax altogether, many contractors began to purchase cement in bulk directly from the plant in Casablanca. This meant that builders began storing large quantities of unpackaged cement on their construction sites, creating additional problems of exposure to humidity. The lack of sacks also restricted cement's range of movement. The already limited exports from the Lafarge factory in Casablanca to Tangier and French West Africa (AOF) ceased entirely.[285] While contractors in Casablanca could treat the plant as their own private storehouse, construction projects outside of the Protectorate's economic capital had no reliable means of obtaining cement. These wartime problems of packaging and distribution coupled with the limitations of production inspired strident regulatory measures through which a material politics of scarcity began to take shape. With authorizations already required for the purchase of scarce materials, the French administration aimed to ensure that contractors employed the absolute minimum dosage of cement in all cases.[286] By 1945, the OCH introduced measures for standardizing prefabricated concrete components to simplify the surveillance of the mixing process. Practical obstacles to the circulation of cement empowered state actors in Casablanca and elsewhere to assemble a network for material distribution with cement at its center.

[285] Comité centrale des industriels du Maroc, "Resumé des réponses reçues de l'industrie de la cimenterie," undated [1940], 11MA/900/905, CADN.
[286] Organe officiel du groupement interentreprise, *Annuaire du bâtiment et des travaux publics* (Casablanca: Éditions Réalisations; Maroc-Presse, 1942), 28.

Figure 4: "Ensacheuse," Chaux & Ciments Lafarge, February 23, 1949, photograph number 29998, 21/MA212, CADN.

Through a combination of legal and technopolitical means, cement's circulation—the pathways it followed to become concrete—became a way of doing politics under the Protectorate. The conditions of wartime scarcity revitalized the political possibilities of maintenance work, as the Protectorate administration and the OCH in particular deployed cement grants in an effort to secure assent.[287] When Mohamed Derbani (Muhammad Darbani), the director of a small Qur'anic school in Casablanca, applied for a ton of cement, his request was forwarded to the Directeur des Affaires Politiques in Rabat. Derbani described serious cracks in one of school's support walls and the extensive repair work required to prevent a dangerous collapse.[288] While the municipality generally refused applications like Derbani's, his request was

[287] These efforts also resembled earlier strategies like those documented by Stacy Holden in Fez, whereby French officials supported Moroccans in the building trades as a means of securing their loyalty. Stacy E Holden, *The Politics of Food in Modern Morocco*, 113-114.
[288] Contrôleur Civil, Chef des Services municipaux de Casablanca to Directeur des Affaires politiques, "Demande de

instead moved up the administrative hierarchy and marked as "confidential" due to the "political interest" it represented. Administrators also deployed grants of essential materials to secure alliances with rural clients. One engineer in Souk El Arbaa (Suq Arbiʿaʾ al-Maghrib) asked for twelve tons of cement for repairs to the home of a local notable, Cheik Ben Aissa (Shaykh ibn ʿIsa).[289] In a note describing the degradation of the shaykh's private residence, the engineer asserted the need to complete essential repairs before the winter rains to ensure the security of this elite rural family. Maintaining the appearance of rural notable households was a way of asserting the French administration's capacity to continue delivering durable forms of material well-being to loyal clients. The state also supplied cement to two categories of local artisans: tile manufacturers making mosaics and zelliges and producers of cinder blocks.[290] In a letter, Lahcen ben Mohamed Glaoui (Lahsan ibn Muhammad al-Glawi), the *amīn* of Casablanca's cinder block producers assured the city's head municipal engineer that he would personally oversee "all of the manufacturers and *muʿallimūn* to determine who deserve to have the cement and who does not."[291] Grants of cement and other materials like iron and steel, enabled Moroccan residents to act as intermediaries between the colonial state and artisan communities—distributing essential materials in ways that conformed to and potentially deformed the political intentions of administrators.

While distributing material stocks to presumed political allies, the Protectorate's Vichy-era administration could also restrict flows to "less worthy city-dwellers."[292] Under Resident

matériaux de Monsieur Mohamed Derbani," January 17, 1944, A1752, AM.
[289] Gras, Ingénieur subdivisionnaire, Chef de la subdivision de Souk el Arba to Contrôleur Civil Chef du cercle de Souk el Arba, August 2, 1944, A1660, AM.
[290] Contrôleur Civil, Chef des Services municipaux de Casablanca to Directeur des Affaires politiques, January 12, 1944, A1752, AM.
[291] Lahcen ben Mohamed Glaoui to Ingénieur municipal de Casablanca, November 30, 1943, A1752, AM.
[292] "Note au sujet des mesures à prendre pour remedier à la crise du logement dans les villes," undated (circa 1941), 1MA/200/302, CADN.

General Noguès' tenure, municipal service's across Morocco contemplated the expulsion of Jews and other categories of residents labeled undesirable from European new cities as a means of lessening the effects of the housing crisis on non-Jewish French citizens living in Morocco. When two Jewish community leaders, Bendahan and Chocron, approached Casablanca's municipality in 1941 about the possibility of a cement grant for the completion of a local synagogue and Hebrew school, they received a refusal in spite of the fact that construction was already underway and considered of "unquestionable utility" and "extreme urgency" by the Sharifian Affairs Administration.[293] After delaying the project indefinitely for "practical reasons," Casablanca's municipality moved to seize the existing stocks of materials that Bendahan and Chocron had accumulated, including a large supply of iron bars for reinforcing concrete.[294] The administration rerouted these materials to another project deemed of "equivalent social and political interest": the construction of the SOCICA Moroccan worker housing project in the Carrières centrales.[295]

This capacity to regulate material flows gave the OCH an influence over urban construction that extended far beyond state-financed housing projects. And yet, the administration's heavy investment in controlling the circulation of cement meant that the Office's failure to reign in unauthorized flows threatened to undermine not only specific housing policies but the state's capacity to intervene in urban life in general. In addition to issuing building permits, the OCH required owners to apply for "permits of purchase" for the exact quantities of construction materials needed for their projects.[296] This measure, designed to prevent hoarding,

[293] Conseiller du Gouvernement chérifien to Directeur des Affaires politiques, "Construction d'une école hébraïque et d'une synagoge," October 6, 1941, A1687, AM.
[294] Contrôleur Civil, Chef des Services municipaux de Casablanca to Directeur des Affaires politiques, "Stock Bendayan et Chocron," November 9, 1941, A1687, AM.
[295] Directeur des Affaires politiques to Conseiller du Gouvernement chérifien, "Stock Bendayan et Chocron," December 3, 1941, A1687, AM.
[296] Office chérifien de l'habitat, "Procès-Verbal de séance: Réunion du 4 juillet 1945," July 4, 1945, A1410, AM.

only encouraged the creation of a black market for cement. Officials even feared that their own cement grants were being funneled into the black market by unscrupulous intermediaries.[297] The OCH suspected Moroccan recipients in particular. In one instance, members of the Office described how part of a cement shipment destined for housing construction in Port Lyautey (Kenitra) vanished while under the surveillance of one of their officials. The missing cement soon reappeared on Casablanca's black market.[298] The same year, the already scandal ridden head of the Office in Casablanca accused a foreman, Sugères, of using his position in the OCH to illegally obtain materials for the construction of two villas in the Quartier de l'Aviation in Casablanca.[299] Another OCH foreman in Casablanca, Montade, was arrested and held in Rabat for usurping a false identity.[300] Accusations of corruption and mismanagement plagued the Office throughout the late-1940s while the housing conditions of Moroccan and European residents continued to decline.

Beyond the relative incompetence or corruption of the colonial state, however, the OCH's financial and administrative irregularities suggest how the ambiguous boundaries between official and unofficial circulation both reproduced and undermined the Office's mission. Cement flows in a time of scarcity presented moments of danger and possibility. Once imagined as a fast, cheap, and "modern" solution to the housing crisis, cement's tendency to flow a little too freely threatened to engulf the Protectorate's main housing authority in permanent scandal and to deal a serious blow to French "national dignity."[301] The Protectorate's accounting office discovered in

[297] "Note pour Monsieur le Directeur de l'Office chérifien de l'habitat," [1944], A1410, AM.
[298] Veron and de Lattre, "L'enquête effectuée à l'Office chérifien de l'habitat," Annex II, Inspection générale des finances, March-April 1948, E0817, AM, 33.
[299] OCH de Casablanca to Directeur de l'OCH, September 25, 1948, E0817, AM.
[300] Pelletier to Milan, December 28, 1948, E0805, AM.
[301] Veron and de Lattre, "L'enquête effectuée à l'Office chérifien de l'habitat," Annex II, Inspection générale des finances, March-April 1948, E0817, AM, 33-2.

1949 that the Office carried out a number of construction projects entirely off the books.[302] Challenged by the state's accountants, the Office's director, Milan, was never able to fully account for the number of properties the Office owned or administered. In the words of two financial inspectors, "the Office knows neither exactly what it has built nor what it owns."[303] Yet such lacunae could be immensely profitable. Given its legal authority to expropriate and close links with investors, the Office proved an ideal vehicle for accumulation. It is perhaps unsurprising that after leaving the OCH, Milan headed a major real estate firm that engaged in extensive speculation in Casablanca.[304]

While embroiled in these financial scandals, members of the OCH's administrative council continued to debate the most the viable solution to the problem of Moroccan housing in the Residency. Casablanca's Aïn Chock (ʿAyn Shuq) neighborhood served as a frequent point of reference for officials, who generally saw the project as either too costly to scale up or as monotonous and alienating (i.e., too modernist). Designed by Antoine Marchisio the project was initially intended to absorb portions of the *bidonville,* Beni Msik.[305] Aiming to harmonize modern design principles and prevailing assumptions about Moroccan social organization, Marchisio imagined a form of "semi collective housing" made up of interconnected single-family units, often centered around an enclosed patio.[306] Slopping archways and decorative details broke up the sharp lines and whitewashed walls that visually dominated the

[302] Conseil d'administration de l'Office chérifien de l'habitat, Section de l'habitat européen, June 10, 1949, E0815, CADN, 13.
[303] Veron and de Lattre, "L'enquête effectuée à l'Office chérifien de l'habitat," Inspection générale des finances, March-April 1948, E0817, AM, 18.
[304] Mentioned in Sylviane Munoz, "Spéculation et répercussion des influences politiques sur l'urbanisme dans la zone française du protectorat au Maroc," *Cahiers de la Méditerranée* 26, no. 1 (1983), 111.
[305] The following discussion of Aïn Chock draw heavily on Cohen and Eleb's description of the project. Cohen and Eleb, *Casablanca,* 293.
[306] Cohen and Eleb, *Casablanca,* 294.

development.[307] These aesthetic features as well as the use of reinforced concrete in certain structures gave Aïn Chock a price tag that far exceeded expectations. Housing in the satellite city ultimately proved too expensive for most slum dwellers and instead attracted merchants, low-level administrators, and even Europeans.[308]

As Mirande, a representative of the Ministry of the Interior suggested, "the critique to formulate concerning Aïn Chock is not that it is not attractive enough, but that it is too good. Given the enormous demand for housing that confront us, it would be preferable to explore lighter constructions as a solution, as cheap and as economical as possible."[309] Milan argued that so-called "light" constructions ended up being even more expensive and that using locally available sources of stone to construct simple, solid structures for Moroccans was the most promising path.[310] While uncertainty remained over exactly which qualities were desirable in new urban constructions, officials agreed that the eventual solution to the problem of housing should be a kind of intermediary form between the solid, stable constructions of Aïn Chock and the *bidonvilles* themselves. The basic components of Michel Écochard's argument in favor of "housing for the greatest possible number" were already present in debates among OCH officials. The solution to the housing crisis was defined in terms of varying the material properties of structures themselves to adjust for fluctuations in either the urban population or state budgets. The OCH identified matter itself—solid or light, stone or concrete—as the domain into which the state could actually intervene. All other factors—rural migration, Casablanca's industrialization, the allocation of state resources—were cast as externalities beyond the

[307] *Maroc 1950* (Éditions Fontana, 1950), 156. Citied in Cohen and Eleb, *Casablanca,* 296.
[308] André Adam, *Histoire de Casablanca, des origines à 1914* (Gap: Éditions Ophrys, 1968), 97.
[309] Conseil d'administration de l'Office chérifien de l'habitat, Section de l'habitat marocain, June 10, 1949, E0815, CADN, 22.
[310] Conseil d'administration de l'Office chérifien de l'habitat, Section de l'habitat marocain, June 10, 1949, E0815, CADN, 23.

influence of the colonial administration.

Living *en dur* in the Postwar Protectorate

Over the course of the 1940s, the OCH gradually positioned itself at the center of a network of material distribution that embedded the political priorities and paradoxes of the Protectorate into Casablanca's housing projects—both those the Office directly sponsored and those it supported by providing access to stocks of materials. Official arguments about scarce matter intersected with debates that had been raging since the interwar period about how to secure adequate forms of bodily well-being for Moroccan and European residents. Municipal administrators marshaled assumptions about the cultural needs—or lack thereof—of recent rural migrants and about Moroccan family structures in general against the backdrop of rising densities in the center and growing slums on the periphery. As the nationalist and labor movements expanded their membership during and after WWII, colonial anxieties about the material aspirations and political mobilization of middle- and working-class Muslims peaked. In this context, questions about the durability of housing took on broad cultural and political significance.

Architectural historians of Casablanca sometimes assume that once constructed, the meanings of colonial apartment buildings and housing projects were largely fixed.[311] European and Moroccan residents of Casablanca, however, not only possessed differing access to durable forms of housing but also to state networks of material distribution that shaped possibilities for

[311] Cohen and Eleb, *Casablanca: Colonial Myths and Architectural Ventures;* Abderrahim Kassou, "Les chants de l'expérimentation: Casablanca, Laboratoire d'architecture et d'urbanisme" (TPFE [travail personnel de fin d'études]), École d'architecture de Paris la Villette, 1997), Centre de ressources documentaires de Casamémoire; Khalid Rafai, "Casablanca: Habitat pour le plus grand nombre étude en vue d'une réhabilitation" (TPFE, Nantes, École d'architecture de Nantes, 1995); Wright, *The Politics of Design in French Colonial Urbanism*; Nasser Rabbat, *The Courtyard House: From Cultural Reference to Universal Relevance* (New York: Routledge, 2017).

maintenance work. When in 1945 European residents of the Cité du Peyroux apartment complex complained about leaky roofs, for example, the building's owner applied for six hundred sheets of corrugated metal from the city. In requests addressed to the municipality and the Director of Political Affairs in Rabat, the owner and the renters described an "urgent" need for sheet metal as water dripped into the building.[312] As discussed in the previous section, Moroccan inhabitants succeeded in acquiring such grants only when their interests aligned with those of officials. This rationing of repair gave material form to the political priorities of the French Protectorate. In most cases, "modern" materials like cement or corrugated iron were to be saved for European constructions. Local materials, masonry, and the skills of Moroccan artisans would have to fill in the gaps for projects such as the Habous neighborhood in Casablanca. In spite of collapses in Meknes and Marrakesh, members of the OCH continued to insist that industrial cement was not strictly necessary for building "indigenous housing" and that traditional methods would suffice.[313]

State efforts to regulate material flows intersected with debates about how to house different categories of city dwellers. From the perspective of Protectorate planners, the problem of securing adequate housing for colonial subjects stemmed from a series of racialized and gendered assumptions about Moroccan bodies and the Moroccan body politic.[314] Members of the

[312] Emmanuel Cacambouras to Bureau des constructions, Casablanca, May 29, 1945, A1660, Archives du Maroc.
[313] Veron and de Lattre, Annex II, 54.
[314] Ellen J. Amster, *Medicine and the Saints: Science, Islam, and the Colonial Encounter in Morocco, 1877-1956* (Austin: University of Texas Press, 2013), 13; See also Driss Maghraoui, "Gendering Urban Colonial Casablanca," in *Gendering Urban Space in the Middle East, South Asia, and Africa*, ed. Martina Rieker and Kamran Asdar Ali (New York: Palgrave Macmillan US, 2008), 17–43. For literature on Gender and Orientalism see Lila Abu-Lughod, "'Orientalism' and Middle East Feminist Studies," *Feminist Studies* 27, no. 1 (2001): 101–13; Fatima Mernissi, *Beyond the Veil: Male-Female Dynamics in a Modern Muslim Society* (Bloomington: Indiana University Press, 1994); Zehra F. Kabasakal Arat, *Deconstructing Images of "the Turkish Woman"* (St. Martin's Press, 1998); Meyda Yegenoglu, *Colonial Fantasies: Towards a Feminist Reading of Orientalism* (Cambridge University Press, 1998); Homa Hoodfar, *Between Marriage and the Market: Intimate Politics and Survival in Cairo*, First edition (Berkeley: University of California Press, 1997); Judith E. Tucker, *In the House of the Law*, First edition (Berkeley, Calif.: University of California Press, 2000); Ziba Mir-Hosseini, *Islam and Gender: The Religious Debate in Contemporary Iran* (Princeton University Press, 2000); Fatima Mernissi and Ruth V. Ward, *Dreams of Trespass:*

OCH imagined apartment living as a moral problem. Before the construction of Michel Écochard's multi-story *grands ensembles* in the early 1950s, the prevailing wisdom within the housing administration was that Moroccan subjects would never tolerate living in apartment buildings. The only way of avoiding "the promiscuity that Muslim women would be submitted to in a multi-story building" —in the shared hallways and stairwells that could become sites of mixed-gender socialization—was to continue constructing cheap, single-story "traditional housing."[315] Neighborhoods composed of simple, one or two room homes generated additional problems, however. French urban professionals and Moroccan notables agreed that shared toilettes among the urban poor created "conditions in which promiscuity is infinitely more likely than it could ever be in a multi-story building where renters encounter each other on the stairway."[316]

Local officials also faced contradictions between imposing regulatory order on apartment dwellers and managing Moroccan forms of inhabitation. In Rabat, a property owner, Si Mohamed Ben Aomar, was targeted by the local contrôleur civil for the number of residents informally inhabiting his recently constructed apartment building. While Ben Aomar had legally rented some units in the building, a large number of the apartments were reserved for members of his extended family. Another section of the building contained the apartment and office of the director of the Institution Guessous, a school founded by the nationalist leader Ahmed Balafrej. Since these apartments had not been legally leased, their residents were technically subject to

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Tales of a Harem Girlhood, 1 edition (Reading, Mass.: Perseus Books, 1995); For a discussion of the gendered "others" of the Spanish Protectorate see Naria-Dolors Garcia-Ramon and Abel Albet-Mas, "Voices from the Margins: Gendered Images of 'Otherness' in Colonial Morocco," Gender, Place and Culture; Abingdon 5, no. 3 (November 1998): 229–40.

[315] Service de l'urbanisme et de l'architecture, "Quelques idées sur la politique de l'urbanisme et du logement au Maroc," 1947, 1MA/200/303, CADN, 18.

[316] Service de l'urbanisme et de l'architecture, "Quelques idées sur la politique de l'urbanisme et du logement au Maroc," 1947, 1MA/200/303, CADN, 19.

expulsion. The contrôleur civil acknowledged, however, that the existing rental code conflicted with Muslim conceptions of property and the family. Confronted on the one hand with incommensurable notions of the boundary between formal and informal rental practices, on the other with the inevitable political scandal that the removal of a notable nationalist would have, Rabat's municipal services opted to leave the case unresolved.[317]

The problem of apartment living was not unique to Moroccans. Since the beginning of the Protectorate, European settlers had debated which forms of dwelling would be best suited to colonial urban life. In an article from the late 1920s, Joseph Vattier had addressed the reluctance of urban *colons* to countenance living in multistory buildings when they had arrived in Morocco expecting to reside in colonial villas. For Vattier the solution to the European housing crisis was identical to the solution to a wider crisis of "domesticity."[318] Centralized cooking, washing, and heating could revolutionize apartment living, helping to transform the French of Morocco into "hommes nouveaux."[319] Jean-Louis Cohen and Monique Eleb have demonstrated how the emergence of these apartment-dwelling "new men" depended upon a class Moroccan domestic workers whose presence was inscribed in the architectural forms of 1920s and 1930s apartment buildings.[320] Unlike metropolitan structures of the period, Casablanca's multi-story buildings contained shared laundry rooms and service tunnels designed to remove domestic workers from view. The erasure of Moroccan workers from interior spaces paralleled the incorporation of Moroccan motifs into the art deco and art nouveau façades of the city center. French architects such as Albert Laprade, Edmond Brion, Auguste Cadet, Albert Greslin and others elaborated the

[317] Contrôleur Civil, Chef de la région de Rabat to Chef du Secretariat Politique, "Si Mohamed Ben Aomar," March 8, 1947, 1MA/200/302, CADN.
[318] Joseph Vattier, "Le problème du logement," *La vigie marocaine*, March 7, 1929, 1.
[319] Vattier, 1.
[320] Jean-Louis Cohen and Monique Eleb, "Casablanca," *Bulletin d'informations architecturales*, 222, Supplement (1999), 19.

"Neo-Moroccan" or "Neo-Mauresque" style that incorporated *zellige*, green tile roofs, and other stylistic elements associated with North African Islamic architecture into the sumptuous designs of French colonial exteriors.[321] This formula—the aesthetic inclusion of cultural markings associated with "Moroccanness" alongside the spatial exclusion of Moroccan inhabitants from city centers (expect as domestic workers)—was the defining feature of modernist architecture in Morocco prior to WWII. The official assertion that multi-story dwelling was incompatible with Moroccan mores formed against the backdrop of arguments about the role of apartments in creating an ideal colonial type: an entrepreneurial, energetic, and exclusively European subject.

Over the course of the 1940s, the complexities of urban life and housing scarcity began to erode this argument. Within the housing administration, the notion that apartment living was ill-suited to Moroccan family structures—creating dangers of mixed-gendered socialization or violation— was gradually overwhelmed by concerns about moral decline in the *bidonvilles* themselves. The "excessive densities" of the slums inevitably created problems of "promiscuity."[322] In a thesis for the Centre des Hautes Études Administratives, Jean Ratier described the problem of "rural women" living in the *qaryan*:

> If she…stays at the factory, left to her own devices, a veritable unrestrained child, its to be supposed that fear will not always win out over curiosity. If she stays at home, as mandated in the '*caïdat*,' the promiscuity of the environment in the *bidonville* can lead to deviations of behavior that the husband will find out about one day or another. In such cases, it is a raucous drama, often followed by a separation. It is curious to note that Moroccans, very well informed of these scandals, seem to link the housing situation to these failures of virtue….those living, not in the shanties, but in the *derbs* built *en dur* around the *bidonville* were seriously married, the women were faithful to their husbands. To live in stable housing [*Habiter le 'dur'*] is to have lived longer in the city and

[321] Jean-Louis Cohen and Monique Eleb, "Casablanca," *Bulletin d'informations architecturales* 222, Supplement (1999), 18-21; Gwendolyn Wright, *The Politics of Design in French Colonial Urbanism* (Chicago: University of Chicago Press, 1991), 108-118.
[322] Pierre Mas, "Problèmes d'habitat musulman au Maroc," *Bulletin économique et social du Maroc* 18, no. 62 (1954), 217.

especially to be wealthier.…Virtue is considered proportional to one's income….[323]

Ratier's off-hand remark that Moroccan residents attributed moral decline to the environment of the *bidonvilles* suggests that the material qualities of Casablanca's different neighborhoods had come to represent more than a neglectful state. The changing class and moral connotations of living in stable, permanent housing (*en dur*) made the question of where and how cement became concrete a matter of respectability.

These material-semiotic shifts around questions of housings' durability were inseparable from the Protectorate state's history of managing the slums prior to WWII. Casablanca's postwar housing shortage was at least in part a result of municipal interventions in the *bidonvilles* during the late 1930s. Since the first use of the term in Casablanca in the 1920s, references to *bidonvilles* as a threat to public health masked colonial anxieties about the successes of leftist and nationalist political organizing in these neighborhoods. After the city's municipal government began razing neighborhoods in the slums, displaced inhabitants were forced to seek housing elsewhere. Landlords in the new or old *madīna*—areas unaffected by the demolitions—resorted to auctioning off houses to the highest bidder.[324] Owners could raise rents on a monthly basis, forcing even residents with stable employment into precarious living arrangements. With no effective rehousing policy in place, displaced Moroccan residents were either submitted to the whims of unregulated landlords or compelled to sleep outside in even more perfunctory forms of shelter

The typhus epidemic of 1938 provided the initial impetus for municipal legislation targeting Casablanca's slums. In response to fears about the disease's spread into European

[323] Jean Ratier, "Étude sociologique du bidonville des Carrières centrales" (Centre des hautes études administratives sur l'Afrique et l'Asie modernes, [undated, circa 1950]), AM, 31.
[324] Copy of a letter to le Ministre Plénipotentiaire, Sécrétaire Général du Protectorat, February 14, 1939, E0831, Archives du Maroc.

quarters, the July 8, 1938 *dahir* established the legal groundwork for practices of urban demolition in the *bidonvilles*.[325] The royal decree gave *qa'ids* and *pashas* the authority to order the destruction of individual homes or entire neighborhoods without the possibility of a legal challenge from either owners or residents. In describing what constituted a "*bidonville*," the decree explicitly targeted "groups of houses made from light materials."[326] While such agglomerations were theoretically outlawed in both cities and suburbs, Article Four clarified that "indigenous constructions made of light materials like those erected by the administration of the Committee on Indigenous Housing can be authorized within cities and their suburbs…" if they met the appropriate hygienic criteria.[327] The administration envisioned the continuation of light, temporary housing as an urban form at the very moment of planning for its elimination. This provision evidenced a certain tolerance for precarious forms of urban life providing they could be adequately assimilated into state networks of surveillance and management. Moreover, when it came to their demolition, light, temporary structures were not simply tolerable, they were desirable.

The removal of Moroccan housing built *en dur* posed technical and political problems for the municipality. When officials slated the Derb Ghallef neighborhood for demolition in 1938, the population of local laborers and functionaries—many of whom had sold off property in the *bled* to invest in new, solid houses in Casablanca—protested vehemently. Residents threatened, for example, to immolate three bulls in front of the Sultan's palace in the Habous

[325] For an account of hygiene campaigns and the role of demolition in the "regeneration" of colonial urban space in Tunisia see Richard C. Parks, *Medical Imperialism in French North Africa: Regenerating the Jewish Community of Colonial Tunis* (Lincoln; London: University of Nebraska Press, 2017), 85-88.
[326] "Exposé des motifs pour le Dahir du 8 Juillet 1938 relatif à l'assainissement des villes et des centres urbains," July 8, 1938, 2/MA/1/198, CADN.
[327] "Exposé des motifs pour le Dahir du 8 Juillet 1938 relatif à l'assainissement des villes et des centres urbains," July 8, 1938, 2/MA/1/198, CADN.

neighborhood.[328] Moroccan inhabitants of these aspiring "middle-class" quarters—built informally but with the tacit acquiescence of the municipal government—proved more resistant to removal during this period than those in the *bidonvilles* of Beni Msik or the Carrières centrales. The presence of structures with concrete components—often mixed using black market cement—in a neighborhood like Derb Ghallef threatened to delay state-sponsored demolitions and empower the Moroccan inhabitants of these aspiring zones.

At no point did French administrators envision the total elimination of *bidonvilles* from Moroccan cities. By 1948, after a decade of intermittent demolitions, an estimated nineteen percent of Casablanca's population still resided in the *qaryan*.[329] No matter how great the danger to public health or to the Protectorate's reputation, *bidonvilles*—while they may have required urgent improvement—were accepted as a permanent feature of urban life. Questions about the precise materialities of structures in the *bidonvilles* became important as officials sought to distinguish between threatening and acceptable forms of construction. In making these evaluations, officials frequently referred to the experiences of rebuilding in postwar Europe as a model. Unlike France or Germany, however, the practice of maintaining substandard housing emerged as potentially permanent rather than a temporary solution to the housing crisis. Citing fears of fire in a 1948 circular, the Resident General Alphonse Juin called for reducing the amount of wood in the *bidonvilles*, instructing municipal officials to encourage the use of earthen bricks painted with whitewash instead.[330] Juin nevertheless suggested that prefabricated, wooden structures would have a role to play if better methods for covering them with metallic containers

[328] Ninet, Commissaire Chef de la Police administrative, "Note de renseignements," Casablanca, August 22, 1938, E0831, AM.
[329] Kassou, 67.
[330] Général Juin to Chefs des régions de Casablanca, Fes, Marrakesh, Meknes, Oujda, Rabat, Agadir, "Bidonvilles," December 11, 1948, 1MA/200/302, CADN.

(*bidon*) could be instituted. He envisioned a strategy developed during Austria's rebuilding of collecting recycled canned goods of the same type and fastening them together to produce an effect that resembled roofing tiles. Even Écochard, who was widely credited with attempting to deliver more durable forms of life to Moroccan inhabitants, ostensibly accepted the permanent nature of "temporary" housing.[331]

In other words, the materiality of the *bidonvilles* became central to debates about housing in the Residency in the context of arguments about the environmental causes of moral decline and anxieties over the more durable urban forms that aspiring Moroccan residents would produce of their own accord. Beginning with the worker housing projects of Brion and Cadet in 1920s and 1930s, architects, engineers, and planners cultivated the notion that lack—of industrial cement or individualized connections to water and power grids—was somehow suited to the ethical forms of life valued by Moroccan residents. For urbanists like Pierre Mas, Morocco's *bidonvilles* were signs of "a taste for life and ingeniousness…a concern with embellishment and decoration—painted murals in vivid colors, and well-maintained shrubbery…."[332] Mas studied at the Institut d'Urbanisme in Paris and joined Écochard's team in 1949. He carried out studies of Casablanca's *bidonvilles* and other forms of Moroccan housing and later worked on Agadir's reconstruction after 1960. Mas juxtaposed the external vivacity of slum neighborhoods and their simple sense of social solidarity with the aspirational, discomforting Europeanness of petit bourgeois constructions in the New Medina. Concrete here was not a symbol of safety and progress but the sign of a kind of perverse, black-market modernity, flourishing in conditions of scarcity. Citing one example Mas noted that "the excessive use of floor space, without any

[331] Michel Écochard, "Problèmes d'urbanisme au Maroc," *Bulletin économique et social du Maroc* 15, no. 52 (1951), 8.
[332] Pierre Mas, "Problèmes d'habitat musulman au Maroc," *Bulletin économique et social du Maroc* 18, no. 62 (1954), 209.

concern for hygiene, has been rendered possible thanks to the use of reinforced concrete, although the construction is of very poor quality."[333]

Working with Mas and others, Écochard's interventions after 1946 ranged from the creation of *bidonvilles améliorées*—the partial clearing and extension of road and sewer access to slums—to the rapid construction of new low-cost Moroccan housing typologies, primarily the *trame 8x8*.[334] For proponents, a major advantage of single-story *trame 8x8* or *trame* Écochard was its adaptability and appearance of durability. Units could be quickly demolished if the area was rezoned or built-up two or even three stories to create denser agglomerations. With the help of new public-private housing companies—whose role will be the subject of the following chapter—the state built 6,000 of these single-story units in Casablanca alone, covering the Carrières centrales.[335] Compared to the preceding decade, Écochard's plan for the city prioritized extension over direct intervention, with Beni Msik and the Carrières centrales as notable exceptions.[336] While arguably improving the living conditions of many residents, all of these efforts also responded to a security-centered imperative to make the *qaryan* more accessible to colonial police forces.[337]

As in previous campaigns, the demolitions that began in Carrières centrales at the end of

[333] Mas, 213.
[334] Rachik, 78.
[335] Arnaud de Montmarin, "Les conceptions actuelles en matière d'habitat économique au Maroc et leur application à la reconstruction du Derb Jdid à Casablanca," *Supplément aux annales de l'Institut technique du bâtiment et des travaux publics* 150 (June 1960), 618.
[336] Kassou, 88; De Montmarin, 618.
[337] Scholars and present-day urban professionals have painted Écochard's tenure as Morocco's head urbanist as a turning point in the history of Moroccan cities, particularly Casablanca. It is true that the priorities of French housing policy largely shifted during this period and that the principal of "housing for the greatest possible number" remained central to the administration into the period of decolonization. While he did not fundamentally contest the practices of housing segregation in Morocco, Écochard did support a reallocation of state resources in favor of housing construction for Moroccans. This support was arguably a major factor in his eventual dismissal. The immediate reason for Écochard's dismissal was his refusal to alter the plan for the Thuillier project in Rabat. The change ordered by the Director of the Interior would have extended the zone for European housing at the expense of new Moroccan neighborhoods. Michel Écochard, "Note à Monsieur le Directeur de l'intérieur: Aménagement du Souissi," October 29, 1952, 61 IFA 10, AAXXS.

the 1940s were largely carried out by residents themselves. Locals took apart the wood and sheet-metal structures they inhabited under the threat of more violent displacements. Écochard's techno-utopian vision of housing "for the greatest possible number" depended on the destructive labor of the Moroccan workers in the slums. The labor of demolition was also gendered. As the nationalist daily, *Al ʿAlam,* demonstrated in a series of photographs tracking the transformation of the Carrières centrales, women were key participants in dismantling the neighborhood, which remained in a state of perpetual reconstruction and partial demolition throughout the late 1940s and early 1950s.[338]

Figure 5: The Trame Écochard in the Carrières centrales
Michel Écochard, *Casablanca: Le roman d'une ville* (Paris: Éditions de Paris, 1955)

In remaking the Carrières centrales, Écochard also relied on the equation of material simplicity with cultural authenticity. The notion of "culture-specific" housing, already tested in

[338] Ṣuwar ḥaraka al-hadm wa al-bināʾ fī al-Karayan sanṭrall, *Al -ʿAlam*, April 3, 1949, 1.

the corporate housing projects of the 1920s and 1930s, emerged as a solution to a distinctly modernist crisis—a solution designed to mediate between culturally situated subjects and constrained colonial budgets. Various state actors promoted culture-specific housing for Moroccans that used a minimum of scarce and relatively costly modern materials such as cement. Cohen and Eleb have traced this linking of ideas about cultural authenticity to the politics of colonial austerity through the example of the courtyard in new housing typologies deployed by Écochard's team:

> It is a strange twist of fate…that the ruling colonial powers elected the multifunctional vernacular language for interior layout precisely because of its affinities with minimum housing. In the end, the design teams' inability to respond to different housing needs and variations in family size casts a negative light on their work on housing composition and culture-specific programs. It is somewhat derisory, to say the least, that these types of programs amounted to nothing more than a standard housing type composed of a main room and courtyard.[339]

The example of the courtyard—taken to stand in for Moroccan culture as a whole in new housing projects of the period—illustrates one of the paradoxes of the Protectorate's postwar urbanism.[340] Écochard's adoption of a "modernist discourse for European schemes and an ethnological-cum-regional discourse for other [Moroccan] programs," further enshrined the notion that culture, family-structure, bodily and gendered norms, ought to determine access to particular materialities—to the durable forms of life that industrial cement afforded.[341] The fact that residents of Écochard's *trame 8x8* used cinder blocks to build over the units' patios almost as soon as they gained access to these plots was an irony largely lost on French planners who continued to argue that these simple structures were "well adapted to the tastes of a population

[339] Cohen and Eleb, *Casablanca,* 379.
[340] On the courtyard house see also Nasser Rabbat, *The Courtyard House: From Cultural Reference to Universal Relevance* (New York: Routledge, 2017).
[341] Cohen and Eleb, *Casablanca,* 379.

that had kept its rural attachments."[342]

The case of illicit cement flows into new Moroccan neighborhoods built *en dur* illustrates how the network of material distribution created by the OCH failed to conform to the state's priorities. Moroccan shop keepers and construction workers shaped the form of new neighborhoods in opposition to official directives. In this context, state-sponsored interventions into the *qaryan* during Écochard's tenure—including the construction of the most iconic housing projects of the era—represented a way for administrators to reassert their authority over the kind of concrete future that Moroccan cities would take. The extension of Casablanca's urban infrastructures provides a counterexample, where Moroccan residents had fewer means of subverting policies of crisis urbanism.

Infrastructures of Scarcity and Grandeur

Like postwar housing projects, urban infrastructures also depended upon regulating the distribution of scarce materials. Concrete pipes enabled Casablanca's municipality to tap water sources deeper into the Chaoui.[343] The OCH rationed electrical wires and cement for telephone poles, and municipalities across Morocco intensified security at power stations. As with housing, the years following WWII witnessed expanded infrastructure building across the Protectorate. As conflicts erupted within the state over Écochard's new linear plan for Casablanca, however, the vision of a networked city clashed with the limitations of colonial budgets based on an asymmetrical distribution of state resources between Moroccan and European residents. It was during this period that the notion of "*bidonvilles améliorées*"—slums reorganized into a regular

[342] De Montmarin, 618.
[343] For a discussion of French hydraulic policies in Morocco focused primarily on rural dam building see Carmen Ascanio-Sanchez, Miguel Suárez Bosa, and Juan Carlos Almeida Pérez, "Tradition and Modernity: The Water Sector in Morocco during the French Protectorate (1912–1956)," *African Historical Review* 51, no. 1 (2019): 67–86.

grid with basic water and sewer attachments—came to prominence within the new housing administration as a cost effective first stage in what Écochard envisioned as the eventual replacement of most slums with collective housing.[344] Officials in Casablanca and elsewhere also embraced the argument that housing (at least temporarily) without infrastructure could be a fast, cheap, and culturally appropriate means of addressing the most pressing consequences of the continuing housing crisis.

Scholars in STS, the history of technology, and anthropology have imagined infrastructure as a kind of architecture—poetic and political—for the flow of goods, people, ideas, etc. As anthropologist Brian Larkin maintains "infrastructures are the material forms that allow for exchange over space….[the] totality of technical and cultural systems that create institutionalized structures whereby goods of all sorts circulate, connecting and binding people into collectivities."[345] Following the circulation of cement in postwar Casablanca brings to light an aspect of this politics and poetics often lost in discussions of already existing built infrastructures—even those characterized by constant breakdown. This is that infrastructures depend on the flow of labor and materials for both their construction and maintenance.[346] Larkin also argues that scholars must become attuned to the ways in which technical governance blends with aesthetic imaginaries in the everyday construction and management of water, road, and electricity networks.[347] Infrastructures in this reading are not the mundane backdrop to modernization projects, but central spectacles of colonial power—stages for performing

[344] Michel Écochard, "Urbanisme et construction pour le plus grand nombre," *Construire* 506 (March 23, 1950), 274.
[345] Brian Larkin, *Signal and Noise: Media, Infrastructure and Urban Culture in Nigeria* (Durham: Duke University Press, 2008), 5-6.
[346] The emphasis on the invisible labor required for the maintenance and construction of infrastructures follows the approach proposed by Susan Leigh Star. Susan Leigh Star, "The Ethnography of Infrastructure," *American Behavioral Scientist* 43, no. 3 (1999), 384.
[347] Brian Larkin, "The Politics and Poetics of Infrastructure," *Annual Review of Anthropology* 24 (2013), 329.

promises of technological development.[348] While Protectorate and post-Protectorate planners and engineers certainly indulged in their own visions of a techno-utopian future—with vivid reports of new dams and power stations—a more austere ethics emerged alongside these celebrations—a poetics of infrastructural lack. Urbanists like Mas, imagined scarcity as a virtue and equated bricolage in the *bidonvilles* with cultural authenticity.[349]

In the postwar period, the pipes, roads, and sewers necessary to service single-family homes for Moroccan residents remained far more costly than housing construction itself. At times, Protectorate planners justified delaying connections to Moroccan neighborhoods by calling attention to the consumption patterns of local residents. While a European family used five hundred liters of water a day on average in 1950, an unconnected Moroccan family was only expected to consume one hundred and fifty.[350] For administrators, maintaining clean and hygienic forms of life for French families in Morocco was a question of "national dignity."[351] Yet as Milan pointed out while director of the OCH, the pipes, electrical wires, and paint necessary for preserving French dignity constituted 60% of the cost of new constructions and were carefully rationed.[352] Notions of Moroccan consumption patterns shaped also the physical form of the water grid in Casablanca. Even when planners did connect single-family Moroccan housing, they used thinner lead pipes than those intended for European apartment buildings and villas.[353]

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[348] Brian Larkin, *Signal and Noise: Media, Infrastructure, and Urban Culture in Nigeria* (Durham: Duke University Press, 2008), 18.
[349] Pierre Mas, "Problèmes d'habitat musulman au Maroc," *Bulletin économique et social du Maroc* 18, no. 62 (1954), 209.
[350] Régie d'exploitation industrielle du Protectorat, "L'exploitation du Fouarat," November 1950, 1MA/1/85, CADN. 36-37.
[351] Veron and de Lattre, "L'enquête effectuée à l'Office chérifien de l'habitat" (Section générale des finances, May 28, 1948), E0817, Archives du Maroc, Annex II, 33.
[352] Veron and de Lattre, 52.
[353] Guillaume to Contrôleur Civil, Chef des Services municipaux de Casablanca, "Distribution d'eau," May 7, 1947, A1660, AM.

Electricity especially seemed a luxury to French administrators for whom it was "socially and politically more useful to house Moroccan populations rather than extending the power grid."[354] While administrators assumed that Moroccan families were accustomed to limited water, they imagined locals as excessive, undisciplined consumers of electricity. In the first year of its publication, the nationalist daily, *Al ʿAlam*, reported on state-imposed power cuts and the various exceptions created for industrial production.[355] In the spring of 1949, with rivers low and hydroelectric production reduced, the authorities attempted to limit electricity consumption through surcharges, individual shut offs, and eventually planned blackouts for entire neighborhoods.[356] The image of Moroccans as unruly consumers of electricity blended with other forms of colonial anxiety as anticolonial resistance intensified in the early 1950s and officials scrambled to increase security at power stations.[357] Fears of sabotage at the power plant in Meknes, for instance, justified the allocation of another 100 million francs to secure an electricity grid that disproportionately served Europeans at the expense of local residents.[358]

There was a distinct temporality to infrastructure building under the postwar Protectorate. Practices of delay and deferral characterized the construction of connections for much of the new Moroccan housing during this period. One project for seventy-one worker houses in Marrakesh's Industrial Quarter was initially conceived as a model for safe, cheap, and hygienic housing. With concrete for the framework, masonry from local quarries, and the adaptation of "indigenous" waterproofing methods the project was one of many that sought to capture local forms of expertise in an effort to build as quickly and as inexpensively as possible. Before construction

[354] R. Vaez-Olivera, "Note pour M. le Sécretaire Général: réunion E.E.M. du 26 juin," May 25, 1954, 2MA/1/203, CADN, 2.
[355] "Al-taqtīr f-istihlāk [al-kahrabāʾ]," *Al - ʿAlam*, December 3, 1946, 2.
[356] Direction des travaux publics, "Note sommaire au sujet des restrictions d'électricité," March 5, 1949, 1MA/1/87bis, CADN.
[357] Pierre Siraud, "Protection des installations de l'E.E.M.," June 8, 1954, 1MA/1/87bis, CADN.
[358] Georges Girard, "Protection des installations de l'E.E.M.," June 2, 1945, 1MA/1/87bis, CADN.

even began, however, the promises of safe and hygienic housing had begun to erode. While the municipality planned to enlarge the existing sewer system to include the Industrial Quarter by the end of 1952, no corresponding extension of the water distribution system was scheduled. One of the project's engineers, Papet, delayed installing plumbing until plans for connecting the housing project to water infrastructure were in place. By October of 1952 with ninety worker houses nearly completed, both water and sewer connections remained a pipe dream. The administration feared that a project originally imagined as a hygienic solution to the housing crisis would itself become a public health hazard upon occupation. A year later, in the fall of 1953, the project remained uninhabited and unconnected to water, sewer, or electricity grids. With orders from the assistant director of Public Works to move residents into the homes as quickly as possible, the projects' engineers proposed the temporary solution of taking water from the nearby seguia of Targa. As the region's head engineer noted, "the water [of the seguia] is obviously polluted; but the natives of the nearby douar use it. There is no question of filtering this water to remove the materials suspended in it, which would prove extremely costly with unpredictable results. Instead we could simply limit ourselves to withdrawals on days when the water is not too murky."[359]

Assumptions about differing bodily needs and consumption patterns embedded a logic of racial difference into the urban infrastructural projects of the French state in Morocco.[360] At the same time, the delayed attachment of Moroccan housing to water and electricity grids served an explicitly security-centered function, especially in the growing *bidonvilles* on the outskirts of

[359] Veyrenche, Ingénieur des ponts et chaussées, Chef du 3e arrondissement du sud to Ingénieur des ponts et chaussées, Chef du Service de l'habitat, "Alimentation provisoire en eau, du lotissement marocain du Quartier Industriel à Marrakesh," October 16, 1953, E0695, AM; Papet, Ingénieur T.P.E., "Rapport du subdivisionnaire: 1ère tranche de 71 logements," June 9, 1952, E0695, AM; Papet, Ingénieur T.P.E., "Rapport du subdivisionnaire: Viabilité-Avant-Projet," June 13, 1953, E0695, AM; Bayloc, Sous Directeur, Chef des Services municipaux to Ingénieur des ponts et chaussées, Chef du 3e arrondissement du sud, "Habitat marocain du quartier industriel," February 11, 1953, E0695, AM.
[360] Amster, 131-136.

major Moroccan cities. While European residents and state officials blamed Casablanca's two major slums, Beni Msik and the Carrières centrales for the outbreak of various urban epidemics during the 1930s and 1940s, "hygienic" measures in these zones often seemed designed for rapid entry by colonial police forces more than cleanliness. The first telephone lines—supported by concrete utility poles—that extended into Casablanca's *bidonvilles* connected outlying police posts to central stations.[361] In 1948, the Resident General Alphonse Juin noted that in the *bidonvilles*, "There is no question of bringing [electrical] current into the homes of inhabitants, but perfunctory public lighting must be carried out in each *douar*."[362] Opening and illuminating streets in the *qaryan* to facilitate easy access by colonial police forces remained the first priority of Casablanca's municipal government until 1952.

Ellen Amster has suggested that "in Morocco, the colonial separation of races into two cities—*madina* and *ville nouvelle*—impeded the unification of a municipal sewer system and made waterborne illness a disease category tied to race."[363] This argument applies as readily to Casablanca as to Fez or Marrakesh. In the context of formal segregation, the placement of pipes was inseparable from the production of racialized bodies as Europeans and Moroccans gained asymmetrical access to hygienic resources. The point, however, is that once constructed, municipal sewer systems depended on a network of repair and material distribution that at times threatened to undermine the very categories they were meant to enact. Waterborne diseases traveled from Moroccan neighborhoods to European centers. Asymmetrical distributions of cement were also implicated in these public health crises. An outbreak of typhoid fever in May

[361] Général Juin to Chefs des régions de Casablanca, Fes, Marrakesh, Meknes, Oujda, Rabat, Agadir, "Bidonvilles," December 11, 1948, 1MA/200/302, CADN.
[362] Général Juin to Chefs des régions de Casablanca, Fes, Marrakesh, Meknes, Oujda, Rabat, Agadir, "Bidonvilles," December 11, 1948, 1MA/200/302, CADN.
[363] Amster, 136.

of 1945 contaminated much of the Casablanca's water supply. In response, municipal public health authorities requested an exceptional fifty tons of cement to repair damaged sewer connections in an effort to slow the disease's spread.[364] Repair work in such cases had the dual purpose of containing contamination and shoring up the separation between European and Moroccan bodies.

While promoting an ethos of limited connection for Moroccan residents, Protectorate officials also found opportunities to stage French *grandeur* through the concrete pipes of Casablanca's water grid. By the late 1940s, consumption in the city had nearly exhausted nearby water sources, pushing municipal engineers to tap rivers deeper into the Chaouia. Reinforced concrete was the preferred vehicle for this infrastructural extension. One project to transport water from the Oum Er-Rbia depended on new types of flexible concrete pipes like those designed by the SOCOMAN corporation. In their application for the Oum Er-Rbia contract, the Société Commerciale et Minère pour l'Afrique du Nord cast the pipe itself as the "materialization of considerable technical progress"—a manifestation of the Protectorate's social vision and economic mission.[365] They emphasized the pipe's qualities as a "Cartesian" product and charted its transnational expansion from France and North Africa to the U.S., Cuba, Argentina, and Chile.[366]

Just as Casablanca's water grid depended on the concrete pipes produced by SOCOMAN or the Société Tuyaux Bonna, these companies depended on a regulated network for ensuring their access to scarce cement. Public ceremonies celebrating the extension of Casablanca's

[364] Directeur du Bureau municipal d'hygiène de Casablanca to Directeur de la Santé publique et de la famille, "Demande de ciment," June 27, 1945, A1752, AM.
[365] Commission des marchés, "Concours pour l'amenée à Casablanca des eaux de l'Oum-er-Rabia: Appel de la Société SOCOMAN," June 21, 1948, 1MA/10/111, CADN, 5.
[366] Commission des marchés, "L'amenée à Casablanca des eaux de l'Oum-er-Rabia: Annexe numéro 3 au mémoire d'appel de SOCOMAN," June 21, 1948, 1MA/10/111, CADN, 1-2.

infrastructures were also occasions for the performance of colonial power.[367] High officials, industrialists, and Moroccan notables assembled in 1950 for the opening of a new factory for the Tuyaux Bonna company that included a visit to the construction sites where workers installed five meter long, eleven ton concrete tubes that would eventually connect the Si Said Machou dam to water consumers in Casablanca.[368] A group led by the director of Public Works included a number of *qaʾids*, *pashas*, and *khalifas* from Casablanca and the surrounding areas. Welcomed with speeches and scale-models, this group then proceeded to a segment of the 76 km long construction site to observe the coordinated efforts of three teams of workers as they lowered massive segments of pipes into a trench.

One member of the group described the clouds of dust thrown up at every stop and the desert of debris surrounding each of the sites. The movements of this procession of Moroccan and European officials—from the factory to the scale model to the construction sites— mapped out a modernist vision of the construction process itself with fabrication, design, and execution separated into distinct phases and sites. References to dust and debris portrayed a landscape turned inside out for the needs of urban expansion. Following the visits, the ranking Moroccan official M. Zarouki praised the "artisans" of this engineering feat—a term that ambiguously lumped together the labor of construction workers, engineers, and industrialists.[369] The European and Moroccan notables who participated in such events portrayed development as a collective process—a category that papered over the unequal distribution of stable forms of dwelling and attachment in the colony city.

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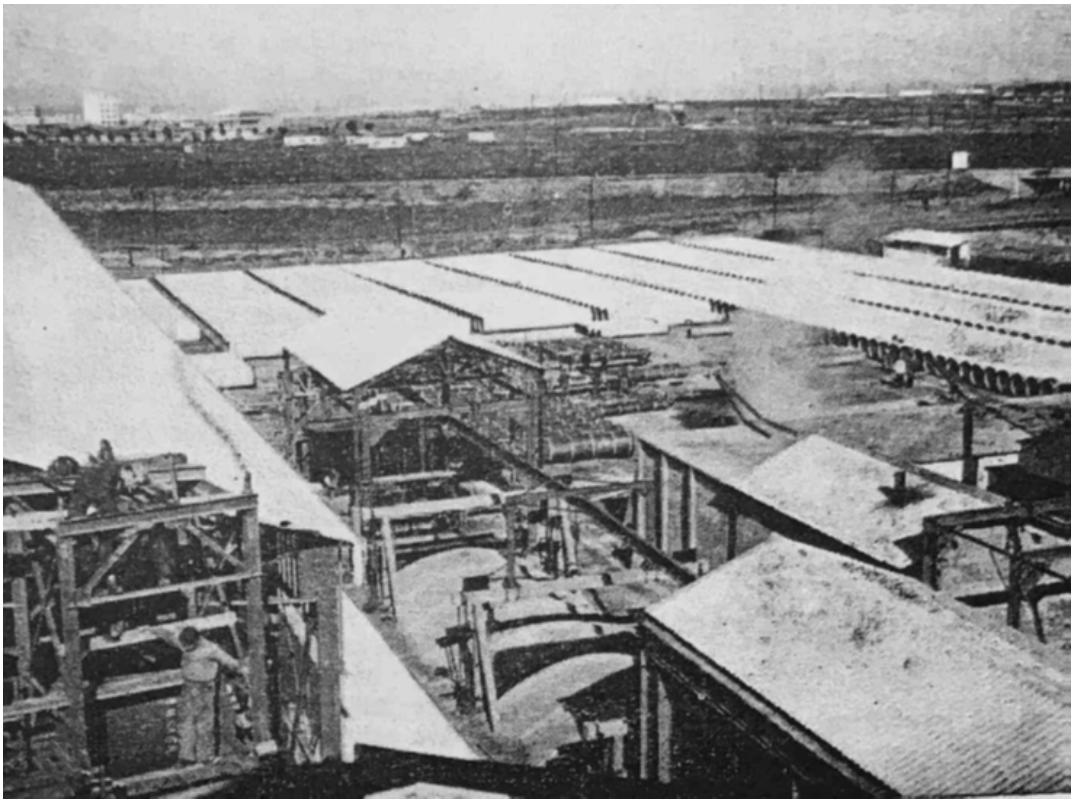
[367] Such ceremonies bear some resemblance to what Brian Larkin, borrowing from David Nye has referred to as the "colonial technological sublime." Larkin, *Signal and Noise,* 18; David Nye, *American Technological Sublime* (Cambridge, Mass.: MIT Press, 1994).
[368] Paul Guerin, "L'alimentation en eau de la ville de Casablanca," *Construire* (May 25, 1950), 473-475.
[369] Paul Guerin, 475.

Figure 6: "Partial View of the New Tuyaux Bonna Factory," Paul Guerin, "La nouvelle usine des Tuyaux Bonna à Casablanca," *Construire*, (May 18, 1950).



The assumption that Moroccan residents—particularly in the *qaryan*—would continue to tolerate unequal access to cement, water, and electricity compared to Europeans as long as gradual improvements continued was central to the strategies of modernist planners from the OCH's housing policies to Écochard's grand interventions. Practices of delaying access to more durable forms of life were bound up with arguments about cultural difference—about Moroccan residents ultimately demanding less. In December of 1952, the violence of deferred connection and neglect would intersect with more dramatic forms of violence—an eruption that provoked a reformulation of categories for thinking and techniques for managing the colonial city.

Violent Matter and the Riots of December 1952

The urban uprising that took place in Casablanca in December of 1952 shattered the official vision of a carefully managed social peace. Following the riots and the deadly reprisals carried out by European residents and the colonial police force, state administrators and nationalist politicians alike cast the outbreak of violence as an inevitability. Both groups identified the proximate causes of the events that began in Carrières centrales on the morning of December 7th as the assassination of the Tunisian trade unionist leader Farhat Hached and the calls for a general strike by Moroccan trade unions and members of the nationalist Istiqlal party. Inspectors investigating the origins of the uprising singled out nationalist and communist political organizing in Casablanca's largest *bidonvilles* as the true culprit.[370] In official reports, the police described how groups of Moroccan men moved through the streets attacking Europeans in and around the Carrières centrales. At multiple junctures, these groups encountered patrols of armed *mokhazem*—colonial auxiliaries—who opened fire on the crowds. Although numerous disputes emerged over the official numbers, hundreds of Moroccans were likely killed during the course of the riots along with at least four Europeans.[371] Hundreds more were arrested including seven European members of the Communist Party.

Nationalist historians and institutions memorialized the events of December 1952 as the most dramatic scene of sacrifice in the struggle for independence—notably by renaming the Carrières centrales "Hay Mohammadi" after the reigning sovereign.[372] At times, this has

[370] Capitant, "Rapport sur les incidents de Casablanca," December 11, 1952, 1MA/200/375, CADN.
[371] Jim House, "L'impossible contrôle d'une ville coloniale?" *Genèses*, no. 86 (June 20, 2012), 79; Louis Trifaud, "Victimes européenes des émeutes des 7 et 8 Décembre 1952," January 22, 1953, 11MA/50/4, CADN. House also discusses some of the same archival documents that I reference in my account of the riots, however, I consulted these sources prior to reading House's article.
[372] Jim House, "Shantytowns in the City," *Francosphères* 3, no. 1 (January, 2014), 45. Najib Taqi has documented the history of the Carrières centrales leading up to and following the December 1952 riots in rich detail. Najib Taqi, *Jawanib min dhakira Karyan Santral-al-Hay al-Muhammadi bi-l-Dar al-Bayḍa' fi-l-qarn al-ʿashrin muhawala fi-l-tawthiq* (Casablanca: A. Retnani Les Éditions la Croisée des Chemins, 2012).

involved downplaying the role of union organizers and labor mobilization and recasting the riots as a spontaneous eruption of anti-colonial sentiment.[373] Historians have analyzed the complex factors that contributed to the outbreak violence and the role of the uprising in hastening the fall of the Protectorate.[374] I am interested instead in how the uprising and its aftermath unfolded within an urban environment marked by the distribution of disruptive materialities. This is not to suggest that the placement of construction sites or scattered piles of cinder blocks somehow caused the riots—although colonial police officials were quick to attribute urban unrest to a disorderly landscape as well as communist and nationalist agitators. My aim is to place the eruption of colonial and anti-colonial violence within the same frame as the slow violence of calculated delays, planed neglect, and the uneven arrangement of secure forms of dwelling.

Following the announcement of the general strike, the Chef de la Region, Philippe Boniface dispatched troops to the Carrières centrales on December 7th. These soldiers circulated in the neighborhood along with representatives of the Pasha informing inhabitants that the strike had been forbidden.[375] That evening, a large group of protesters surrounded a local police station chanting and throwing rocks and other debris. Reinforcements, composed mostly of *mokhazem,* arrived and attempted to disperse the crowds. Pursuing protesters through the maze of worksites in the *qaryan*, detachments of troops engaged in a number of small skirmishes that left an unknown number of rioters dead along with two *mokhazem*. In state accounts produced shortly

[373] This tendency for later nationalist commentators in Morocco to frame the uprising solely in terms of anti-colonial, nationalist politics while diminishing the central importance of labor organization runs parallel to observations Frederick Cooper has made surrounding the dynamics of decolonization in French and British Africa. Cooper has highlighted how nationalist metanarratives have tended to cast all local organizing and political activity prior to independence as unified in the same anti-colonial struggle. Frederick Cooper, *Decolonization and African Society the Labor Question in French and British Africa* (Cambridge ; New York: Cambridge University Press, 1996), 6-7.

[374] See Bruno de Rotalier, "Les yaouleds (enfants des rues) de Casablanca et leur participation aux émeutes de décembre 1952," *Revue d'histoire de l'enfance « irrégulière ». Le temps de l'histoire* 4 (November 15, 2002): 207–22; Miller, *A History of Modern Morocco*, 149.

[375] House, "L'impossible contrôle d'une ville coloniale ?" 90.

after the riot, the urban environment itself figured as a kind of hostile entity in these encounters. Casablanca at the time was a city teaming with construction in both European and Moroccan neighborhoods. The presence of construction sites—emptied by the general strike and filled with now dangerous stocks of concrete blocks—made the Carrières centrales an unruly terrain for colonial police forces attempting to reestablish order. Across this landscape, "what followed was a confusing skirmish during the course of which six mokhzanis were isolated and assaulted by the rioters. The post was abandoned. The neighborhood is vast and covered with numerous construction sites separated by empty lots and quarries."[376] The following morning on December 8th, a similar incident occurred at another police post in the area, and again colonial troops fired into a crowd of Moroccans killing numerous protesters. Isolated acts of violence, including reprisals against Moroccans and the killing of a Spanish nationalist in the *qaryan*, began to erupt throughout the city.[377]

At the same time, several funeral processions converged on the cemetery in Beni Msik, presumably to bury protesters killed on the first day of the uprising.[378] While many of the attendees returned home after these funerals, police reports describe how a crowd of four to five hundred Moroccans broke off from the main procession near the Rue du Lt-Mannevy and began attacking Europeans near the Gironde neighborhood. Members of the crowd were armed with stones and other detritus taken from nearby construction sites. Three rioters whom colonial police later arrested admitted to throwing fragments of cinder blocks at a Frenchmen, Louis Ribes, who was driving through the neighborhood in his car. Two of the accused—Abdelatif ben

[376] Capitant, "Rapport sur les incidents de Casablanca les 7 et 8 décembre 1952," December 11, 1952, 1MA/200/375, CADN, 2.
[377] Capitant, "Rapport sur les incidents de Casablanca les 7 et 8 décembre 1952," December 11, 1952, 1MA/200/375, CADN, 4.
[378] Pierre Vergniolle to Commissaire ddivisionnaire chef de la Sûreté régionale, "Arret d'une colonne de manifestants et meurtre de trois européens," December 8, 1952, 11MA/50/4, CADN.

Kaddour ben Djillali and Ahmed ben Smain ben Lahbib—worked in the building industry as a carpenter and painter respectively. Other witnesses described ben Djillali as having thrown numerous cinder blocks at Ribes and his vehicle. Rioters smashed in the doors and windows of Ribes' car. Photographs in the colonial archive show the side of a battered Citroën, then the interior—a chunk of concrete laying on the seat, fragments of glass strewn on the floorboards. According to police, Ribes fired a revolver from his car, injuring two members of the crowd. He was then pulled from his car, dragged onto a nearby work site, and beaten to death with a number of cinder blocks. Close to Ribes two other Europeans, Henri Ramajo and Norbert Siorat, had been pulled from their bicycles—their faces completely smashed in by large pieces of debris and discarded materials taken from the site. Only the identity cards they carried made it possible to identify the three victims. The police discovered Ribes body last because it had been thrown into an excavated portion of the *chantier*. While some members of crowd had armed themselves with knives and other blunt weapons, the police report emphasized that in each case concrete blocks dealt the fatal blow and rendered the victims unrecognizable.

Figure 7: Interior of Ribes' Car After the Riots, Photograph enclosed in file from the Director of the Interior, Casablanca, January 1953, 1MA/200/375, CADN.

Already in their initial observations, colonial officers imagined the debris-strewn landscape of Casablanca as a factor in the unfolding of the riots—a space that amplified and channeled the violence in particular directions.[379] The concentration of violence on or near construction sites also paralleled the participation of workers in the building industry in the general strike that preceded the riots. In Casablanca alone, the Interior Administration estimated that ninety percent of laborers in the building trades joined the strike with similar numbers in Rabat.[380] Police described how, on the second day of the uprising, organized groups of locals

[379] Trifaud, "Note de renseignements: Assassinats d'européens rue du Lt. Mannevy," December 15, 1952, 11MA/50/4, CADN; Pierre Vergniolle to Commissaire divisionnaire chef de la Sûreté regionale Casablanca, "Arrêt d'une colonne de manifestants et meurtre de trois européens," December 8, 1952, 11MA/50/4, CADN; Photographs enclosed in file from Director of the Interior, Casablanca, January 1953, 1MA/200/375, CADN.
[380] Direction de l'intérieur, Section politique, "Bulletin spécial de renseignements: mouvement de grève," [undated,

circulated in the Carrières centrales and Beni M'sik shutting down any remaining work sites and forcing those present to stop working.[381] For officials, the fact that Casablanca was a space under construction helped explained the police's difficulty in reestablishing order. References to weaponized cinder blocks scattered throughout police reports recast a standardized material once imagined as a low-cost solution to the rapid construction of Moroccan housing as a vehicle for the rapid escalation of violence.

The cinder blocks thrown by protesters were undoubtedly part of an urban assemblage. I draw attention to this fact not to downplay the subjective qualities of violence or to discount the motivations of protesters, but to suggest that even intimate acts of harm can generate wide ranging effects—reformatting not only subjectivities but also technologies, materials, and infrastructures and eventually touching the very core of a "sociotechnical imaginary."[382] If in Frantz Fanon's terms acts of violence could unsettled colonial categories through a reversal of roles—the colonized laying claim to a new kind of identity by doing violence to the colonizer—then this reversal implicated not just the actors but also the stage—Casablanca's urban landscape

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circa December 1952], 1MA/200/375, CADN.

[381] Capitant,"Rapport sur les incidents de Casablanca les 7 et 8 décembre 1952," December 11, 1952, 1MA/200/375, CADN, 5.

[382] The December 1952 riots present a kind of limit case for thinking through so-called "new materialist" theories of agency. In Jane Bennett's version, her "vital materialism," an attention to human-nonhuman assemblages is meant to "gestures toward the strange ability of ordinary, man-made items to exceed their status as objects and to manifest traces of independence or aliveness, constituting the outside of our own experience." For Bennett the power of things, or "actants" in Latour's terminology, stems from a capacity to overwhelm their semiotic boundaries—to act in ways that are not only unanticipated but outside of the very linguistic categories that enframe them. Bennett attempts to mobilize the excessive qualities of things to rethink the category of the "political" itself. Elaborating on Jacques Rancière's definition of politics as actions that trouble existing distributions of agency, Bennett argues that non-human actors also participate in such disruptions. When the disruption in question, however, is an act of violence—whether structural, symbolic, or intimate— Bennett's emphasis on non-human participation performs its own kind of erasure—minimizing issues of subjectivity, responsibility, and motivation. Given this risk, linking the excessive qualities of materials to the violent acts of urban residents in Morocco only makes analytic sense insofar as it reveals how and where violence transformed the arrangements power, agency, and identity in a colonial situation. Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010), xvi, 3-5, 105-106; Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2005), 46; Sheila Jasanoff et al., *Dreamscapes of Modernity : Sociotechnical Imaginaries and the Fabrication of Power* (Chicago ; London: The University of Chicago Press, 2015).

and the modernist fantasies that took material form within it.[383] Police officers could confiscate knives and make arrests, but the weaponization of urban materials—the literal building blocks of a racially segregated colonial city designed by modernist planners—posed a different kind of threat. When Abdelatif ben Djillali threw cinder blocks at Louis Ribes, this act of insurgent demolition inverted not just colonial categories affixed to bodies, but also narratives about urban modernity embedded in construction technologies. In the wake of these violent re-enactments, colonial administrators conjoined their concern over the possibility of France's continued presence in Morocco with a growing anxiety about the promises of modernist urbanism in general.

In the aftermath of the riots, urban officials discussed housing segregation—with all of its exceptions and problematic in-between categories (poor European workers and wealthy Moroccans)—as an insufficient antidote to the forces plaguing the urban social order. During the violence, police evacuated European families who remained in the *qaryan*. Providing shelter for these "refugees," however, proved difficult given the scarcity of housing in the city. The municipality envisioned constructing new emergency shelters for evacuees with funds allotted for "Moroccan Housing." The Director of the Interior justified this proposed reallocation of resources by suggesting that these temporary shacks would eventually be turned over to Moroccan families once more permanent accommodations had been secured for displaced European residents.[384] The Europeans who fled the Carrières centrales were primarily workers in the Industrial Sector and their families. Many were not French citizens, and they tended to occupy relatively lower positions within the colonial social hierarchy. The riot sparked new

[383] Fanon Frantz, *The Wretched of the Earth*, trans. Richard Philcox (New York: Grove Press, 2004), 50.
[384] Directeur de l'intérieur to Chef du Cabinet civil, "Recasement des familles européennes évacuées des carrières centrales," January 12, 1953, 1MA/1/121, CADN.

anxieties about the living conditions of poor Europeans in the kingdom. Shortly after the uprising, the Interior Administration embarked on a survey of Europeans inhabiting substandard housing or residing in the *mudun* and *bidonvilles* of the Protectorate.[385] As the police reestablished order in the *qaryan*, most evacuees refused to move back into their homes, although, as one official noted, the poorest among them would eventually be forced to return by necessity.

To avoid further violence, those residents who did return were to be rehoused in close proximity to the various defensive posts erected in the neighborhood. The administration envisioned creating islands of prefabricated European housing with police stations at their center for the least well-off residents. Located within Moroccan neighborhoods these islands of temporary housing could be rapidly dismantled and moved to other locations in the event of renewed violence. Despite their preoccupations with "national dignity," municipal officials considered the prospect of building new homes for poor Europeans *en dur* ill-suited to the current situation and opted instead for the flexibility of prefabricated wooden shelters.[386] The parallels between these post-1952 debates about where and how to house European workers and the state's history of managing Moroccan *bidonvilles* themselves are striking. As with conflicts over demolition in Derb Ghallaf in the late 1930s, planners and administrators began to regard the new Moroccan neighborhoods consisting of permanent constructions, often using concrete as potentially more problematic than bidonvilles like Beni Msik and the Carrières centrales.[387] The less substantial structures of the *qaryan*, the argument went, could be more easily demolished or

[385] Directeur de l'intérieur to Chef des Services municipaux, "Habitat européen: Programme de construction pour les économiquement faibles," January 27, 1953, 1MA/1/121, CADN.
[386] Sous-Directeur, Chef des Services municipaux to Contrôleur Civil, Chef de la région de Casablanca, December 11, 1952, 1MA/1/121, CADN.
[387] Commissaire Chef de la Police to Directeur de la Sécurité publique, "Note de renseignements," August 22, 1938, E0831, AM.

relocated when the administration needed to intervene in these neighborhoods for reasons of public health or safety. As fears about anti-colonial violence peaked after December 1952, officials imagined this same "flexibility" as a broader solution to the problem of urban order. "Temporary" housing that could be rapidly demolished and relocated was the ideal form for managing working class populations whether European or Moroccan.

Conclusion

After the riots of December 1952, Morocco entered an accelerated phase of the nationalist struggle. The critical decision to exile a recalcitrant Muhammad V in the summer of 1953 sparked widespread protests across the Protectorate. From this moment, intermittent violence intensified in urban and rural settings.[388] Low-cost housing construction continued during this period although with less vigor than under Écochard. Cement production increased annually, and for the first time, new plants opened outside of Casablanca's industrial zone. When independence came in 1956, cracks in the façade of postwar modernist planning had already begun to show as demographic growth continued to out-pace construction and completed projects continued to falter.

Yet focusing on the "failures" of modernist planning ignores the durable arrangements of matter that such "failures" produced. The violent environment that postwar policies of material distribution left behind did not vanish with independence, nor did the fundamental assumptions of Protectorate housing policy. The postcolonial planning authorities envisioned projects for surpassing Écochard's *trames* that would be even "less expensive and better adapted to the customs of the Moroccan population"—two characteristics that were now thoroughly

[388] Miller, *A History of Modern Morocco,* 151-152.

conjoined.[389] In the end, however, the period of substantial public investment in low-cost housing that surrounded the 1952 uprising would prove the exception rather than the rule, as the independent Moroccan state explored other, supposedly more "flexible" solutions such as construction cooperatives, prefabrication, and public-private housing finance [Chapter 3]. The network of institutions, techno-legal practices, and cultural imaginaries that shaped the circulation of cement—the substance necessary for delivering the promises of urban modernity—permanently marked Casablanca's landscape with the political priorities of the Protectorate. And yet, these priorities were constantly subverted by cement's materiality—by the ways in which cement was bound up with the agency, aspirations, and sometimes violent frustrations of actors outside of the state.

Independence did not fundamentally alter the practices of clientism and neglect that channeled cement's flow, but it did shift the stakes. Najoui Mukhtar, a long-term resident of Casablanca, recounted his memories of this period during an interview. Living in two-room "traditional housing" within a company housing project, Mukhtar described the bare simplicity of growing up in the Carrières centrales during the Protectorate. While subjected to every sort of scarcity in his own neighborhood, he had fond memories of traveling from the Industrial Zone to the boulevards and cinemas of the city center. During our conversation, he mourned the decline of these spaces—sites of pleasure and privileged for Casablanca's European residents. A lifelong leftist, Mukhtar was not expressing nostalgia for colonialism. Rather he lamented the loss of a future passed, a future anterior in which residents like himself would have had unrestricted access to the infrastructures and forms of maintenance that made colonial materialities durable and desirable markers of the good life. Instead, it was precisely the moment when most

[389] De Montmarin, 619.

Europeans departed and working-class Moroccans hoped to enjoy these forms of life that the promises of urban modernity appeared to collapse.[390]

[390] Interview, Najoui Mukhtar, May 2017.

CHAPTER 3

CRISIS TECHNOLOGIES

IN AN ERA OF "FLEXIBLE PLANNING" AND DECOLONIZATION

M'hamed Douiri was a "French-Moroccan success story."[391] Born to a "modest family of [Fasi] artisans" in 1926, Douiri received one of ten scholarships to study in France in a competition sponsored by the Sultan in 1945.[392] Once in the metropole, he enrolled at the École Polytechnique, then the École des Mines. Douiri returned to the country as the first French-trained Moroccan mining engineer and soon became involved in nationalist politics.[393] He would eventually marry into the family of the nationalist leader Ahmed Balafrej. After the 1952 uprising and the imprisonment of most nationalist cadres, Douiri became a member of Istiqlal's Executive Committee.[394] In the final months of the Protectorate, he was appointed Morocco's first Minister of Public Works at the age of twenty-nine. Douiri's background—a French technical education and Fasi family ties—was not uncommon among leading Moroccan nationalists, but his specular rise to prominence set him apart. Having witnessed the limits of postwar modernist planning and the political impact of the December 1952 uprising, he understood the potential efficacy of urban revolt. In a 1962 article for *Le monde diplomatique*, a

[391] Marvine Howe, *Morocco: The Islamist Awakening and Other Challenges* (Oxford University Press, USA, 2005), 79.
[392] Howe, 79.
[393] Howe, 79.
[394] Howe, 79.

matter of months after the signing of the Évian Accords, Douiri, addressed Algeria's hard fought anti-colonial struggle—laying out his vision for a Moroccan alternative.[395] Writing in the aftermath of the FLN's victory, Douiri presented himself to the new leaders of Morocco's neighbor as a guide and a kind of older sibling in independence. "The experience [of decolonization] confirmed our affective attachment to the elaboration of a greater whole, on the scale of the Maghrib, and opened toward the outside world."[396]

Charting a course that would diverge sharply from the modernization projects of a socialist Algeria, Douiri celebrated the fact that "our country is among those that have adopted the principle of flexible planning [la planification souple]."[397] On paper this meant supporting a mixture of public and private investments in both urban and rural modernization projects. In practice, flexible planning was about transforming the relationship between the state, Muslim elites, experts, and the urban poor as a reaction to Morocco's intensifying housing shortages, continuous urban unrest, and limited municipal budgets. In response to challenges to colonial authority in cities like Casablanca during the final years of the Protectorate, practitioners of "flexible planning" developed a novel set of technical, financial, and organizational strategies that aimed to resolve and re-scale Morocco's urban crisis by creating new kinds of semi-autonomous and indebted subjects. Douiri oversaw the continuation of these strategies of "flexible planning" during the transition to independence.

This chapter traces techniques of housing finance, construction cooperatives, and the changing politics of housing construction from the early 1950s through the transition to independence in 1956. In modernist definitions of Morocco's urban crisis, *bidonvilles* remained

[395] M'hamed Douiri, "L'économie marocaine, le Maghreb et l'Europe," *Le monde diplomatique*, June 1, 1962, 1-2.
[396] Douiri, 1.
[397] Douiri, 2.

the central source of anxiety and the main target of interventions by the Protectorate's planning offices. Experiments with state-financed housing projects, such as Aïn Chock, had proven too costly for state accountants and too durable for architects enamored with more flexible constructions. With budgets constrained and unrest on the rise during the postwar period, an array of offices, institutions, and urban professionals sought new "experimental" solutions to the housing crisis that accompanied and outlasted Écochard's policies of "housing for the greatest possible number."[398]

By centering strategies like prefabrication and institutions like the Compagnie immobilière franco-marocaine (CIFM), this chapter suggests that the most lasting legacy of colonial urban interventions in the Carrières centrales was not the new architectural and urban forms pioneered by Écochard, Pierre Mas, Shadrach Woods, or Georges Candillis, but rather a collection of *crisis technologies*. Between Casablanca's urban uprising in December 1952 and Morocco's independence in 1956, Protectorate planners and officials confronted a range of urban problems: a renewed nationalist movement that encouraged open revolt in cities and rural areas, a continuing housing shortage in cities like Casablanca in spite of new public housing initiatives, the ongoing resistance of slum-dwellers to displacement and demolition, and a tightening of colonial budgets in response to metropolitan concerns about the future of French rule in Morocco.

Three interlocking technologies enabled planners, accountants, engineers, and foremen to navigate these constraints while transforming violence and neglect into value: prefabrication, housing cooperatives, and new finance models. I argue that these technologies offered three ways of inverting the "problems" of low-cost housing construction. They thus turned a drain on state

[398] Michel Écochard, *Casablanca: Le roman d'une ville* (Paris: Éditions de Paris, 1955).

resources and a source of violent tensions into strategies for the accumulation of resources and the harnessing of labor. Prefabrication permitted a rescaling of expertise—a means of inscribing forms of previously complex and multi-sited technical surveillance into a single artifact—yet ultimately failed to replace the on-site fabrication of standardized cinder blocks. Construction cooperatives and new strategies of work-site management seized on and attempted to mobilize forms of building that state planners had previously considered threatening. Financial mechanisms, like small, low-interest loans made Moroccan workers responsible for the construction of their own housing and indebted to state and public-private institutions. These crisis technologies offered Protectorate officials and their postcolonial successors a means of managing subversive forms of building and dwelling in Moroccan neighborhoods while generating revenue (both on and off the books). All of this while continuing to equate simplicity, flexibility, and lack with cultural authenticity.

While attending to the relatively simple credit arrangements that Protectorate-era officials engineered, it is worth recalling a few core principles from recent scholarship on how finance works in practice. Social studies of finance have contested the virtual, immaterial qualities of financial objects and practices by asserting "the *materiality* of markets: their physicality, corporeality, technicality."[399] In my analysis of housing finance during postwar Protectorate, I treat the materiality of Morocco's real estate markets as a given. Rather than simply asserting that calculative and speculative practices remain material, I follow how state officials concerned with housing finance encountered the materiality of the built world as both obstacle and vehicle

[399] Donald A. MacKenzie, *Material Markets: How Economic Agents Are Constructed* (Oxford; New York: Oxford University Press, 2009), 2; See also Michel Callon, ed. *The Laws of the Markets* (Oxford: Blackwell, 1998); Karin Knorr-Cetina and Alex Preda, eds. *The Sociology of Financial Markets* (New York: Oxford University Press, 2006); Trevor Pinch and Richard Swedberg, eds. *Living in a Material World: Economic Sociology Meets Science and Technology Studies* (Cambridge, Mass.: MIT Press, 2008).

for the creation of value. *Fin-du-Protectorat* financial techniques that targeted the urban poor were not simply political strategies for distributing debt. They were also a means of distributing matter and of re-distributing the state.[400] New credit arrangements between Moroccan residents and public-private institutions came with requirements about how, where, and what to build. Low-interest loans for housing construction tied urban residents to a particular set of materialities—standardized materials and construction technologies that depended upon the continued presence of French experts in the country.

The brief and rocky history of prefabrication in the last decade of the Protectorate provides a case study for thinking through the kinds of technopolitical projects that resulted when modernist fantasies collapsed into failure. The examples of new housing finance programs and new practices of work-site organization offer insight into the kinds of techniques and concepts that persisted in the aftermath of these failures—assumptions and strategies that would be built upon and elaborated decades later during the neoliberal reforms of the 1980s and 1990s.[401] Decolonization only amplified the conditions that made these technologies appear as possible solutions to crisis. After independence, the first generation of postcolonial Moroccan officials reacted to further reductions in state budgets by suggesting that low-income Moroccans who invested their (uncompensated) labor in housing construction were engaged in the project of building the nation itself. The complex interplay between the different crisis technologies discussed in this chapter reveals the overlap and the shared limitations of nationalist and colonial

[400] For recent anthropological discussions of the relationship between debt and state power see Noelle Stout, "Petitioning a Giant: Debt, Reciprocity, and Mortgage Modification in the Sacramento Valley," *American Ethnologist* 43, no. 1 (2016): 158–71; Nicholas D'Avella, "Ecologies of Investment: Crisis Histories and Brick Futures in Argentina," *Cultural Anthropology* 29, no. 1 (2014): 173–99; Laura Bear, *Navigating Austerity: Currents of Debt Along a South Asian River* (Stanford, Calif.: Stanford University Press, 2015); David Graeber, *Debt: The First 5,000 Years* (Brooklyn: Melville House, 2012).
[401] Koenraad Bogaert, *Globalized Authoritarianism: Megaprojects, Slums, and Class Relations in Urban Morocco* (Minneapolis; London: University of Minnesota Press, 2018).

visions of Morocco's urban future during the process of decolonization.

Prefabrication and Modernist Failure

The postwar history of prefabrication in Morocco constituted a "technopolitical" process in at least two respects.[402] First, prefab technologies played a central role in the scale-making projects of Protectorate planners who indulged in the dream of managing urban disorder through the regulation of technical minutiae.[403] In defining the potentialities and risks of prefabricated methods in a colonial setting, officials and engineers also contributed to a vision of Moroccan labor as cheap and unskilled and of Moroccan environments and materials as risky and unreliable. Second, prefabrication redrew the network of actors and agencies implicated in the construction process—linking together new sites, institutions, and forms of knowledge. At the same time, Morocco's early experiments with prefabrication largely failed according to their own criteria—especially when compared to the history of housing finance and construction cooperatives. Prefabricated building components were neither shipped from Europe nor manufactured in Morocco on a large enough scale to alleviate housing shortages. Moreover, even when selectively deployed in temporary or emergency housing, prefabricated materials often proved ill-suited to conditions in the interior of the country. While the fantasy of a homogeneous national territory across which housing technologies could seamlessly travel never materialized, this failure opened up a practical and discursive space—sparking a search for new technofixes to Morocco's urban problems. Techno-failures also strengthened the conviction of certain actors

[402] Prefabrication in Protectorate-era Morocco was technopolitical in the sense proposed by Gabrielle Hecht, in that it represented a "strategic practice of designing or using technology to constitute, embody, or enact political goals." Hecht, *The Radiance of France*, 56-57.

[403] On scale and scale making see Gabrielle Hecht, "Interscalar Vehicles for an African Anthropocene: On Waste, Temporality, and Violence," *Cultural Anthropology* 33, no. 1 (2018): 109–41; Danny MacKinnon, "Reconstructing Scale: Towards a New Scalar Politics," *Progress in Human Geography* 35, no. 1 (2011): 21–36; Roderick Neumann, "Political Ecology: Theorizing Scale." *Progress in Human Geography* 33, no. 3 (2009): 398–406; Sallie A. Marston, "The Social Construction of Scale." *Progress in Human Geography* 24, no. 2 (2000): 219–42.

within the colonial and postcolonial state that "flexible" urban policies based on the exploitation of local materials, cheap labor, and traditional methods represented the most expedient option in a time of crisis.

Protectorate officials used the term "prefabrication" in a broad sense—sometimes to refer to the project of mass-producing entire homes, sometimes simply to housing components manufactured in a factory setting and assembled on site. During the postwar period, the Housing Administration operated workshops in Rabat that manufactured housing units, cell by cell, then transported them on-site to be positioned over already existing foundations.[404] Various workshops also produced concrete slabs and other components that were shipped to work sites across the country. Advocates of these methods emphasized their speed vis-a-vis "traditional" mortar and masonry constructions.[405] In official documents and engineering journals, references to fully prefabricated housing units and their potential appeared alongside discussions of Morocco's housing crisis and the need for rapid resolutions. Ultimately though, cinder blocks—portrayed as a cheaper and more flexible option for low-cost building—dominated new housing construction, in spite of the poor thermal insulation they provided.

The prefabricated concrete house and the cinder-block house represented two different political technologies—two means of scaling the problem of scarce housing.[406] Prefabrication centralized the technical surveillance involved in housing construction and the majority of the physical labor. In one of the major models of prefabrication supported by the OCH, a network of small, open-air factories situated across Morocco would supply low-cost housing units to urban

[404] "L'habitat au Maroc: Réalisations 1955," *Construire* 815 (February 25, 1956): 113–16.
[405] "L'habitat au Maroc: Réalisations 1955," 113-116.
[406] The political imaginaries bound up with prefabrication as a "flexible" technology depended on an understanding of its "scalability" in the sense proposed by Anna Lowenhaupt Tsing, "On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales," *Common Knowledge* 18, no. 3 (Fall 2012): 505–24.

populations within a radius of fifteen to twenty kilometers.[407] Prefab housing was modular by definition, with units expected to perform identically regardless of their location.[408] The underlying logic of prefabrication implied tightened, centralized control over labor, dominance of design over execution, the flattening out of local conditions, and the replication of homogeneous forms. Yet these affordances clashed with the on-the-ground political relations that made up Morocco's urban fabric. Prefabrication generated friction when experimental methods encountered patterns of urban segregation and uneven development between the coastal regions—known since the early days of the Protectorate as *le Maroc utile*—and the neglected interior—*le Maroc inutile.*

Cinder blocks, on the other hand, could be manufactured on site (or in a factory setting) using standardized metallic molds. As a flexible, decentralized method, cinder-block housing varied in form and quality and was often constructed beyond the regulatory reach of the state. Still, cinder blocks fit the political priorities of the postwar Protectorate and the municipal administrations of the early independence-era. As an imperfectly standardized form not radically distinct from older masonry constructions—cinder-block housing filled the gaps where more iconic and expensive modernist housing projects failed to reach. In contrast to the techno-utopian aura surrounding prefabrication—visions of mass-production and full-housing—the cinder block was the material embodiment of colonial austerity. Though quite often indistinguishable in both form and in terms of the materials used in their construction (both were primarily composed of concrete components)—the prefab house and the cinder-block house differed in terms of how their materialities were bound up with various political futures imagined at the end of

[407] Wates Ltd. to Milan, Directeur de l'Office chérifien de l'habitat, November 1, 1945, E0686,AM.
[408] Nandita Badami drew my attention to the fact that the political promises embodied by prefabricated housing were bound up with an understanding of it as a modular form.

Protectorate. Prefabrication fit into the bold modernist visions of architects and engineers who envisioned housing construction as a rationalized, industrialized, and ultimately placeless process. Official tolerance and even encouragement of cinder-block housing betrayed colonial assumptions that Moroccan materialities and the technologies used to produce them would remain inferior to metropolitan ones.

By 1947 the OCH was the primary institution advocating for expanding prefab strategies within the Protectorate's housing programs. Officials there cast prefabrication as a cutting-edge construction technology and an industry that could be developed in Morocco with the eventual goal of exporting prefabricated materials elsewhere.[409] The office hired contractors from Europe to set up shop in Morocco. Having fulfilled their state contracts, however, these companies proved unable to compete with brick and cinder block manufacturers.[410] One of these contractors, Roger Adam, received praise from administrators for the efficiency of his methods and the aesthetic qualities of the structures themselves but also encountered skepticism over the technical aspects of his Casablanca-based project.[411] For members of the Service de l'Urbanisme, prefabrication retained its reputation as a "process of the future, but it will not attain its full potential until our industries have arrived at a level that will allow them to produce metallic houses through either press forming or folding like the body of an automobile."[412] The vision of whole houses manufactured on a Fordist assembly line never came to fruition in Morocco, but planners maintained that the "principle of prefabrication" when applied to specific building

[409] Office chérifien de l'habitat, "Rapport concernant le rôle et l'activité de l'office en 1947," 1MA/200/303, CADN.
[410] Service de l'urbanisme et de l'architecture, "Quelques idées sur la politique de l'urbanisme et du logement au Maroc," 1947, 1MA/200/303, CADN, 14.
[411] Service du contrôle des municipalités et de l'urbanisme to Secrétaire Général du Protectorat, "Concernant le projet de maisons préfabriquées proposé par Monsieur Roger Adam," March 11, 1947, E0836, AM.
[412] Service de l'urbanisme et de l'architecture, "Quelques idées sur la politique de l'urbanisme et du logement au Maroc," 1947, 1MA/200/303, CADN.

components could still revolutionize construction work on a grand scale.[413]

At the height of Morocco's housing shortages, a number of firms explored the possibility of shipping prefabricated structures from Europe to Morocco *en masse*. Prefabricated components could be unloaded in Casablanca, then distributed across the country and assembled on site in various locales. This approach, however, was never seriously attempted due to the high cost and logistical difficulties of transport. Instead companies like the British firm, Wates Limited, proposed establishing factories for producing prefabricated components in Morocco itself.[414] The firm promised that a network of small workshops with no more than fifty workers—sixty percent of whom could be women—could supply ten houses per week each.[415] The OCH's director Milan became enamored with such proposals that allowed for the introduction of new standardized materials and processes "born of the war" that used only half the material of "traditional constructions."[416] For Milan, prefabrication offered a means of reducing the need for skilled Moroccan workers through a "mechanization of labor on the construction site."[417] The OCH's enthusiasm for the Wates program ran afoul of the Protectorate's Finance Administration, however, which was reluctant to introduce a "foreign firm" into Morocco and worked to limit the scale of the project.[418] State accountants pointed out that projects like Wates Limited's—though requiring specialized plans, engineers, and imported components—used materials that were "effectively identical to those necessary for traditional Moroccan constructions."[419] Associations with speed and efficiency aside, prefabricated housing

[413] Service de l'urbanisme et de l'architecture, "Quelques idées sur la politique de l'urbanisme et du logement au Maroc," 1947, 1MA/200/303, CADN.
[414] Wates Ltd. to Milan, Directeur de l'Office chérifien de l'habitat, November 1, 1945, E0686,AM.
[415] Wates Ltd. to Milan, Directeur de l'Office chérifien de l'habitat, November 1, 1945, E0686,AM.
[416] Milan, Directeur de l'Office chérifien de l'habitat to le Directeur des Finances, June 8, 1946, E0686, AM.
[417] Milan, Directeur de l'Office chérifien de l'habitat to le Directeur des Finances, June 8, 1946, E0686, AM.
[418] Directeur des Finance to Milan, le Directeur de l'Office chérifien de l'habitat, May 23, 1946, E0686, AM.
[419] Veron and de Lattre, "L'enquête effectuée à l'Office chérifien de l'habitat," Inspection générale des finances, March-April 1948, E0817, AM, 48.

lacked the grand performative qualities of multi-story modernist housing or infrastructural projects and remained visually indistinguishable from other forms of minimum housing.

The U.S. military presence in Morocco during the Second World War had instilled a certain appreciation for American construction methods among French engineers and planners. New wartime building technologies came to represent the cutting edge for these expert communities.[420] The administration's use of prefab methods expanded during the postwar period but remained confined to small-scale projects. A major impetus for the state's reinvestment in prefabrication came in the aftermath of Michel Écochard's housing policies in Casablanca and the remaking of the Carrières centrales during the early 1950s. While Écochard's *trames* 8x8 were undoubtedly cheap—using a mixture of cinder blocks, bricks, and concrete slabs for the terraces—they relied on "traditional" construction methods as well as local skilled and unskilled labor.[421] Opponents and successors criticized aspects of Écochard's plans, singling out these methods as too slow to counter the need for rapid construction and proposing American prefabrication technologies as an alternative.[422] The U.S.-based Le Tourneau company introduced a system for pouring concrete into a standardized mold for a four-walled cell-unit that could be transported on a specialized vehicle to construction sites.[423] In this process, only a small portion of the work—laying the foundations—had to be carried out on the construction site itself. Not only were far fewer laborers required, but they were spatially spread across different sites rather than clustered on a single *chantier.* In the aftermath of the December 1952 Casablanca

[420] In the U.S. context, Francesca Russello Ammon has discussed this process in relation to postwar projects of destruction pushed forward by a new technology, the bulldozer. *Bulldozer: Demolition and Clearance of the Postwar Landscape* (New Haven; London: Yale University Press, 2016).
[421] "Congrès nord africain du bâtiment et des travaux publics" (Casablanca, April 13, 1953), 577, BMHPV, [no page numbers].
[422] "Congrès nord africain du bâtiment et des travaux publics" (Casablanca, April 13, 1953), 577, BMHPV, [no page numbers].
[423] "Congrès nord africain du bâtiment et des travaux publics" (Casablanca, April 13, 1953), 577, BMHPV, [no page numbers].

riots, the Protectorate administration was likely more attuned to the dangers of concentrating workers and materials on construction sites during moments of urban unrest.

Figure 8: Vehicle for Transporting Prefab Units, "Congrès nord africain du bâtiment et des travaux publics" (Casablanca, April 13, 1953), 577, BMHPV.

Advocates of prefabrication in both Europe and North Africa promised to reorganize work sites along the lines of the Taylorist factory—rationally restructuring the process of building and the hierarchical relations between experts and laborers.[424] The need for

[424] For discussions of prefabrication in other contexts see Amy E. Slaton, *Reinforced Concrete and the Modernization of American Building, 1900-1930* (Baltimore: Johns Hopkins University Press, 2001); Adrian Forty, *Concrete and Culture: A Material History* (London: Reaktion Books, 2016); Krisztina Fehérváry, *Politics in Color and Concrete: Socialist Materialities and the Middle Class in Hungary.* (Bloomington: Indiana University Press, 2013).

prefabricated elements to travel seamlessly between multiple sites, however, undermined this project. A Belgian engineer, Maurice Delange, noted in 1950 that "as regards prefabrication itself, which aims to provide housing in the same way as an automobile or any other sort of ready-to-use machine, the problems of execution are far from resolved."[425] As concrete elements moved from specialized workshops, to stocking facilities, and eventually to work sites, they were subject to shifts in temperature and humidity that could lead to decay and deterioration. For some French engineers, the introduction of prefabricated concrete components created as many problems as it aimed to solve, particularly when the crews in charge of their installation were inexperienced.[426] Architects and planners expressed a different set of concerns about prefabrication's future in Morocco. Écochard became a cautious supporter of prefabrication while remaining concerned about the difficulties of thermal and sound insulation for this new type building.[427]

Arguments in favor of prefabrication as a solution to material scarcity and work-site discipline clashed with interests within the state that continued to equate cultural authenticity with austerity. The major public housing finance institution, the Caisse de Prêts Immobiliers, refused to issue loans for the construction of prefabricated housing, citing the lower cost and proven track record of "traditional" constructions.[428] Concern over how prefabricated materials would behave in Morocco's supposedly unruly climate also played a role in limiting the involvement of housing lenders in these projects.[429] Lamy, the Director of Finances, went as far as to suggest that experimental technologies like prefabrication were ill-suited to the needs of

[425] Maurice Delange, "La préfabrication: Son avenir en Europe," *Construire* 496 (January 11, 1950), 23.
[426] Jean-Pierre Levy, "La détérioration des façades en éléments de béton," *Construire* 831 (June 16, 1956): 393–98.
[427] Service du contrôle des municipalités et de l'urbanisme to Secrétaire Général du Protectorat, "Concernant le projet de maisons préfabriquées proposé par Monsieur Roger Adam," March 11, 1947, E0836, AM.
[428] Négrier to Bouillet, August 19, 1950, 1MA/1/121, CADN.
[429] Lamy, Directeur des Finances to Directeur du Cabinet Civil, [date illegible, circa 1950], 1MA/1/121, CADN.

low-income Moroccan residents who ought to "be satisfied with a construction that is simple, but with a solid structure, which they can be sure will last long after they have repaid their mortgages."[430] In this articulation, the source of risk was less prefabricated methods themselves than the unpredictable nature of local conditions in Morocco. Any failure of prefabrication to translate into a workable housing solution contributed to a vision of Morocco as a risky space for investment. The "solution" proposed by the Finance Administration—continuing to invest in "simple," "traditional constructions" —was predicated on the assumption that Moroccan labor was and would remain radically cheaper than in the metropole.[431] Continued austerity and the devaluation of labor—the argument went—was a more solid guarantee of value than any presumed technological advantage that prefabrication presented.

While these perceived limitations and the opposition of the Morocco's lenders curtailed their expansion in urban settings, prefab units played a different role at the margins of empire. Prefabricated housing allowed administrators and military officials to make their sparse presence felt across distant corners of the Protectorate. A rapidly deployed prefab villa for a local French officer in a rural commune served as material manifestation of the state's authority. The Protectorate's Public Works Administration made ample use of prefabricated chalets manufactured in Europe such as those imported by the Fabrima Company for the Distribution and Installation of Prefabricated Housing in Casablanca.[432] These chalets, which could be assembled and disassembled with relative ease, would serve as temporary homes or offices for the administration's personnel on far-flung work sites. Public Works officials flipped through catalogs of stand-alone structures and blueprints provided by Fabrima. The plan for the

[430] Lamy, Directeur des Finances to Directeur du Cabinet Civil, [date illegible, 1950], 1MA/1/121, CADN.
[431] Lamy, Directeur des Finances to Directeur du Cabinet Civil, [date illegible, 1950], 1MA/1/121, CADN.
[432] Girard, Directeur des Travaux Publics to Directeur de l'Office chérifien du commerce avec les Alliés, October 7, 1947, G1360, AM.

construction of one model known as the “Villégiature” suggests the ways in which prefabrication fit into metropolitan imaginaries of colonial technology.[433] Page one depicts a completed version of Fabrima’s “Pavillon 7” flanked by palm trees and other tropical flora. The scenery is vague but suggestive of the model’s capacity to fit seamlessly into a variety of colonial climes. At the same time, the term *villégiature* evoked images of leisure and rural retreat—comfort and tranquility for the unit’s European inhabitants.

[433] Génie civil et bâtiment (Paris), "Pavillon 7: Type 'Villégiature'" [undated], G1360, AM.

Figure 9: "Pavillon 7: Type 'Villégiature'" ***Génie civil et bâtiment (Paris)*****, [undated], G1360, AM.**

Like other forms of housing in the postwar Protectorate, prefab units were racially marked, albeit more subtly than the "techno-cosmopolitan" hybrid architecture of the interwar period.[434] In postwar Europe and the U.S., prefabrication evoked images of standardized, uniform housing—notions of modernity associated with placelessness and homogeneity. The

[434] Rabinow, *French Modern,* 278.

idea being that, when regarding the façade of a prefabricated home, one could make few assumptions about the type of subjects living inside. This conceit proved threatening in Morocco's segregated urban landscape where official policy dictated that racial divisions between subjects ought to emerge through housing forms. In their negotiations with prefab suppliers, the OCH made clear that standardized housing units were to visually maintain distinctions between Muslim, Jewish, and European residents. The administration's initial contract with Wates Limited, specified that the company was to provide two hundred and fifty prefabricated "double villas" for Europeans.[435] These "villas"—though subdivided into two separate and much smaller units— were intended to give the outward impression of colonial luxury. In contrast, prefab units for Moroccans were characterized by their very *lack* of ornamentation. In Casablanca's slum removal campaigns, prefabrication was meant to replace the already stripped down "old Moroccan methods" for building minimum housing while reproducing the visual form of the *trame* 8x8 with lightweight, whitewashed concrete walls.[436]

One aim of prefabrication was a rescaling of expertise—an attempt to horizontally reproduce the same hierarchical relations between laborers and engineers across different work sites. The failures of prefabricated materials to travel seamlessly across Morocco's fractured geography betrayed and reinforced the state's continued weakness in the interior of country. Methods developed during the slum removal campaigns of Casablanca fell short when applied in Marrakesh, for example. As unrest intensified in the summer of 1955, officials in Marrakesh called in new police contingents to reestablish order in the city. To house these incoming officers, the Service de l'Urbanisme planned to build a development of prefabricated chalets. [437]

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[435] "Devis descriptif des maisons préfabriquées type Wates," E0686, AM.
[436] "Congrès nord africain du bâtiment et des travaux publics" (Casablanca, April 13, 1953), 577, BMHPV, [no page numbers].
[437] Hardy, Contrôleur Civil, Chef de la région de Marrakesh to Directeur des Services de sécurité publique, June 21,

Marrakesh's chief *contrôleur civil* protested, however, that previous versions of these prefabricated structures had proven ill-adapted to the local climate. Citing the security situation in Marrakesh, the *contrôleur civil* argued that "experience has demonstrated multiple times the extent to which these dwellings offer poor protection from the heat, hence the difficulty for the [police] personnel to rest comfortably, exhaustion, irritation, and as a result, actions that are damaging to morale and to the composure that is indispensable for agents of the state."[438] Urban, anti-colonial violence formed the backdrop to this discussion about the housing needs of police officers. Outside of Casablanca, the temporal demands of rapid construction clashed with those of daily, bodily reproduction. The failure of these units to ensure basic levels of comfort threatened prefabrication's promise to resolve urban unrest by redistributing, redeploying, and rescaling the state to meet the needs of distinct security situations. Despite the supposed urgency of reestablishing order, Marrakesh's head police official envisioned delaying the entire project by two to three months in order to replace at least a portion of the prefabricated structures with "classic constructions."[439] The bodily comfort of police forces trumped even the frantic temporal imperatives of urban crisis.

During the period of heightened urban unrest from the early 1950s to independence, programs for evacuating Europeans from Moroccan quarters also relied on prefab methods. As mentioned in the previous chapter, the official responses to the December 1952 Casablanca riots included projects for rehousing evacuated Europeans in prefabricated wooden structures.[440] As adaptable technologies that could be rapidly deployed and relocated, prefab constructions

1955, 1MA/200/303, CADN.

[438] Hardy, Contrôleur Civil, Chef de la région de Marrakesh to Directeur des Services de sécurité publique, June 21, 1955, 1MA/200/303, CADN.

[439] Hardy, Contrôleur Civil, Chef de la région de Marrakesh to Directeur des Services de sécurité publique, June 21, 1955, 1MA/200/303, CADN.

[440] Sous-Directeur, Chef des Services municipaux to Contrôleur Civil, Chef de la région de Casablanca, December 11, 1952, 1MA/1/121, CADN.

embodied the uncertain political future of the Protectorate itself. The final years of French rule witnessed a reshuffling of urban populations, as the administration either evacuated Europeans living in Morocco's *mudun* or encouraged them to move to the New Cities along with "francophile Moroccans" who could be subject to reprisals.[441] Prefabrication served as a stopgap measure in these moments of unrest, providing a temporary solution for state officials increasingly preoccupied with urban security. This association with semi-permanence and flexibility extended to the uses of prefabrication in slum clearance campaigns during decolonization. As displaced residents from the Carrières centrales and elsewhere were pushed farther to the outskirts of Casablanca, "temporary" rehousing programs offered a means of reaffirming the state's promise to provide affordable housing without committing the necessary resources. The rehousing project in Sidi Bernoussi, for example, included experiments with prefab plastic roofing and light-weight concrete blocks.[442] Postcolonial officials praised these methods, noting that they would allow for the eventual rebuilding of the neighborhood *en dur* at a later date. Prefabrication thus played a role in these strategies of continuous deferral, particularly as the construction industry began to slow in the years following Morocco's independence.

To suggest that prefabrication represented a failed technopolitical project is not to downplay the fact the prefab methods and materials circulated widely in Morocco before and after the experiments of the 1940s and 50s. Rather, it was the notion of transforming housing itself through mass production and the centralization of labor and expertise that ultimately fell short, especially in the years following decolonization. When applied in practice, techniques like

[441] Directeur de l'intérieur to Directeur du Cabinet, "Réclamation de cheminots à la suite de l'attribution d'une villa à Petitjean," September 13, 1954, 1MA/200/303, CADN.
[442] "Casablanca: Élements d'étude" (Ministère des Travaux Publics, 1960), R123, BMHPV.

prefabrication—considered cutting-edge by the Protectorate's housing authority—looked more like stopgap security measures than a housing revolution. Prefabrication's inability to translate outside the coastal zone of *le Maroc utile* also revealed patterns of uneven development and encouraged the state's shift in emphasis from technical to the financial and organizational strategies associated with "flexible planning." At the very moment of centralized planning's supposed apex in Morocco, state and corporate actors began to turn instead to a new set of technologies that aimed to decentralize the problem of housing while turning the urban poor into entrepreneurial and permanently indebted subjects.

"The Attraction of Property": Debt and the CIFM

The strategies of housing finance developed during the 1940s and 1950s introduced new types of personal indebtedness to Morocco's urban working classes. Public-private corporations like the CIFM (Compagnie immobilière franco-marocaine) explored alternatives to direct state investment in housing during and after the Écochard era. These alternatives embodied particular assumptions about precisely which aspects of the modernist urban project would fail. The search for new strategies to finance low-income housing also involved re-imagining and attempting to remake existing class relations in Morocco between Muslim notables and the urban poor.

Official anxieties over the use and abuse of certain building materials—such as concrete in the unregulated constructions of the New Medina [Chapter 2]—paralleled concern over certain categories of investors. On the one hand, the specter of the speculator perturbed planners and officials in the Service de l'Urbanisme. Fast moving and under-regulated capital in Casablanca's real estate market threatened to undermine the political goals of Protectorate's housing policy and to exacerbate social tensions. On the other hand, the figure of the Muslim urban notable represented one of the core obstacles to capital's circulation. In Casablanca and elsewhere,

French officials blamed Muslim notables for failing to invest adequately in low-cost housing. Notables stood accused of shirking both their duties to the economy as potential capitalists and their responsibilities to the urban poor as "traditional" elites.

Downplaying the contributions of Muslim notables while continuing to maintain the colonial state's visibility as a provider of welfare was a core part of the Protectorate's strategy for undermining nationalist calls for independence. Housing finance served as a critique leveled in particular at the elite supporters of the Istiqlal Party. As one official, Charles Esteve stated explicitly, "Our propaganda in Moroccan circles should emphasize this complete failure on the part of Moroccan notables in the fight against the housing crisis for Muslim residents in Rabat and should emphasize the Government's efforts to make up for this failure."[443] Though cynical on a certain level, official criticism of Muslim notables also led to the creation of new institutions like the CIFM whose partial goal was to reshape the investment practices of the country's elite on the eve of independence.

Protectorate administrators hoped to transform Moroccan urban elites from rentiers into model capitalists. Their efforts in this period were distinct from, but also semantically built upon earlier attempts to "[pressure] Muslim bourgeois elites to create private charity societies on a European model to care for the Muslim poor."[444] For postwar officials, creating opportunities for notables to invest in construction and housing finance companies offered the dual promise of resolving housing shortages while disciplining the financial practices of the country's elites. D'Hauteville, the head of the Marrakesh region, lamented, however, that when urban elites decided to construct new housing it was typically reserved for their personal use.[445] Rather than

[443] Charles Esteve, "Note sur le mouvement de la construction à Rabat," June 11, 1951, 1MA/200/303, CADN.
[444] Amster, *Medicine and the Saints*, 122.
[445] D'Hauteville to Chef du Secrétariat Politique, "Participation de notables musulmans aux réalisations d'habitat marocain," May 30, 1947, 1MA/200/303, CADN.

investing in potentially valuable new constructions, landlords were content to raise rents in the *mudun*. During the late 1940s, the task for officials in the OCH, was to convince a larger proportion of Muslim notables to invest in the Office's low-cost housing projects. At times, members of the office acknowledged that in practice the "Moroccan capitalist" differed little from the "European capitalist"—both seeking primarily to increase rates of profit.[446] Affordable housing for the urban poor was simply not a lucrative investment for aspiring landlords in Casablanca or Rabat. To counter this fact, members of the OCH leveraged the office's role as a distributor of scarce materials to convince notables of the advantages of investing in state-run projects. By providing guaranteed access to stocks of cement or rebar the office hoped to assert some influence over the investment practices of the country's elite. A carefully regulated distribution of materials could then channel the flow of capital into the urban projects that French officials deemed most politically relevant.

The OCH aimed to position itself as a conduit through which Moroccan capitalists must pass. At the same time, the office encountered resistance among potential Muslim investors that was irreducible to financial explanations. In Fes and Taza, French officials noted that the hesitance of elites to invest in low-cost housing stemmed not from the profit motive but from an aversion to any association with state-led projects.[447] On the rare occasion that Fasi elites such as Si Mohamed El Marnissi endeavored to construct Moroccan housing, their projects tended to challenge policies of urban segregation. El Marnissi's plans for a low-cost housing development were ultimately rejected by Fez's municipality because of its proximity to European housing in

[446] Colonel Blazy to Chef du Secrétariat Politique, "Participation des Notables Musulmans aux realisation d'habitat marocain," May 3, 1947, 1MA/200/303, CADN.
[447] Matte, Contrôleur Civil, Chef des Services municipaux de Fes to Général Chef de la région de Fes, "Participation des notables musulmans aux realisation d'habitat marocain," May 16, 1947, 1MA/200/303, CADN.

the new city.[448] Muslim notables also appeared eager to invest in other types of generally unprofitable urban amenities. In Oujda for instance, Moroccan landlords began challenging the Habous Administration's monopoly on the construction of public baths (*hammamat*) and endeavoring to erect a new *qissaria* (covered market).[449] Moroccan capitalists who stood accused of shirking their traditional duties nevertheless appeared ready to participate in delivering the types of social services that had fallen under their purview prior to the French invasion. Providing housing for the urban poor had never been a expectation of Moroccan elites in the years before the Protectorate. Instead wealthy city-dwellers in pre-Protectorate times had helped maintain *fanadiq* (sing, *funduq*) for travelers, public baths, and centers of healing for local residents.[450]

The fact that postwar Muslim notables invested more readily in public markets than public housing has little to do, however, with the resilience of any sort of "traditional" duties that may have existed prior to the founding of the Protectorate. Rather at the very moment that the French administration was attempting to re-shape elite investment practices, Moroccan intellectuals were engaged in the process of reinterpreting the nature of notables' social responsibilities. Thinkers like the reformer-jurist and French-appointed Minister of Education, Muḥammad ibn al-Ḥassan al-Ḥajwī, brought their own revisionist understanding of urban life to bear on questions of Islamic reform.[451] Al-Hajwi positioned the market at the center of urban

[448] Matte, Contrôleur Civil, Chef des Services municipaux de Fes to Général Chef de la région de Fes, "Participation des notables musulmans aux realisation d'habitat marocain," April 10, 1947, 1MA/200/303, CADN.
[449] Contrôleur Civil, Chef de la région d'Oujda to Chef du Secrétariat Politique, "Participation des notables musulmans aux realisation d'habitat marocain," May 16, 1947, 1MA/200/303, CADN.
[450] For discussions of pre-Protectorate urban institutions see Edmund Burke III, *Prelude to Protectorate in Morocco: Precolonial Protest and Resistance, 1860-1912* (Chicago: University of Chicago Press, 1976).
[451] For a discussion of al-Hajwi's early career in the precolonial Moroccan state see Etty Terem, "Navigating Modernity: Lessons in Government and Statecraft in Precolonial Morocco," *Mediterranean Studies* 25, no. 1 (2017): 76–97. For edited compilations of al-Hajwi's writings and letters see Muḥammad ibn al-Ḥasan Ḥajwī, *Masā'il wa-rasā'il lil-'allāmah Muḥammad Ibn al-Ḥasan al-Ḥajwī*, ed. Idrīs Karam (Rabat: I. Karam, 2005); Muḥammad ibn al-Ḥasan Ḥajwī, *Al-fikr al-iṣlāḥī fī al-Maghrib al-mu'āṣir : Muḥammad Ibn al-Ḥasan al-Ḥajwī, dirāsah wa-nuṣūṣ*, ed. Sa'īd Binsa'īd 'Alawī (Beirut: Dār al-Madār al-Islāmī, 2007); For an analysis and discussion of al-Hajwi's work

society.[452] As sites for the free exchange of ideas and goods, the open-air *suq* and the trader's *funduq* historically provided a dynamism to Muslim urban life.[453] In al-Hajwi's reading, harnessing the energy of the city's merchants was the key to creating an educated, cultivated urban public.[454]

During the final decade of the Protectorate, the stakes of capitalist investment in the urban built environment were up for debate. Nationalist publications like *Al ʿAlam* served as venues for evaluating the compatibility of Islamic values with capitalism and other economic systems.[455] Notions of charity, profit, social responsibility, and anti-colonial sentiment blended together, bringing to the forefront questions about the kind of urban elite that could emerge in an independent Morocco. Muslim notables' hesitance to participate in projects backed by the colonial state and their interest in financing other sorts of unprofitable urban amenities reveal the limits of French attempts to shape urban real estate markets. In this context, the colonial administration envisioned a novel institutional framework for harnessing the wealth of Muslim elites and channeling it toward slum removal and low-income housing projects. The public-private housing corporation they helped create became the model for a new politics of urban intervention that continues to the present.

The Compagnie immobilière franco-marocaine (CIFM) exemplified an alternative to

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in context see Āsiyah Bin-ʿAddādah, *Al-fikr al-iṣlāḥī fī ʿahd al-Ḥimāyah : Muḥammad Ibn al-Ḥasan al-Ḥajwī namūdhajan* (al-Dār al-Bayḍā': al-Markaz al-Thaqāfī al-ʿArabī, 2003).

[452] For an account of how the Protectorate transformed market practices in Morocco see Adil Khalis, "Al-Ḥimāya al-faransiyya wa inʿikāsātuha ʿalā al-aswaq al-usbūʿiyya bi-l-Maghrib," *Majalla madārāt tārīkhiyya* 1, no. 3 (June 2019): 351–73.

[453] Samuel Kigar has explored al-Hajwi's writings in terms of the relationship between space and knowledge production. Kigar highlights the importance of the market and the traders' lodge for al-Hajwi as sites for the development of an urban culture and public space in Morocco. Samuel Benjamin Kigar, "Islamic Land: Muslim Genealogies of Territorial Sovereignty in Modern Morocco, c. 1900-1990" (PhD, Duke University, 2018), 104-106.

[454] Kigar, "Islamic Land," 104-106. As Terem has argued many of al-Hajwi's latter reform efforts were shaped by his experience of the Moroccan state's disintegration during the final years before the Protectorate's founding. Terem, 79.

[455] "Al-shiyūʿiyya wa-l-Islām," *Al ʿAlam*, July 13, 1949, 2.

direct state investment in housing. Created on April 17, 1951, the CIFM's structure and strategies took shape during the peak of Casablanca's housing shortage, a period of intensifying anti-colonial unrest. As the OCH dissolved in scandal, the CIFM took over the office's role as the primary builder of both Moroccan and European housing in the Protectorate's economic capital. One key difference, however, distinguished the CIFM from its predecessors. As a public-private corporation, the CIFM was tasked with turning low-cost Muslim housing—imagined by Protectorate officials as an immense, but politically necessary drain on colonial budgets—into a profitable enterprise that would not only decrease financial pressures on the central state but also attract the attention of elite Muslim investors. Headed by René Durand, a member of the civil engineering corps, the CIFM brought the Protectorate's community of urban experts together with the major entities driving real estate speculation.[456] The company's stakeholders included the Crédit foncier de France, the Banque de Paris et des Pays-Bas, and the Crédit foncier d'Algérie et de Tunisie—financial institutions invested across the colonial Maghrib.

The CIFM was, in effect, an attempt to imagine a type of organizational structure—derived from the segregated municipal councils of the Protectorate—that would not only survive decolonization but provide a model for it. The company's board of directors was made up of a mixture of private investors and state representatives. Like colonial municipalities, divided into European and Moroccan sub-commissions, these state representatives had to include one Moroccan and one European official.[457] Auditors drawn from the Moroccan elite sat in on both CIFM board meetings and state housing commissions.[458] The "public-private" character of the CIFM, however, was not an indication of the *intrusion* of private capital into a previously public

[456] "Révolution dans la construction marocaine," *La vigie marocaine*, November 10, 1953, reproduced in Taqi, 449.
[457] René Durand, "L'économie mixte au service de l'habitat," *Notre Maroc*, January 1954, 47-53. The *allège* is the section (the height) of a wall between the floor and a window.
[458] "P-V du secrétariat de la Commission du logement," March 27, 1952, 1MA/1/140, CADN.

service (Protectorate municipal governments and the central state had only recently become involved in large scale housing construction for Moroccans at the time of its founding). Rather, the CIFM's material interventions into the urban environment of Casablanca are better understood as attempts to rescale the state itself—distributing the state temporally rather than spatially, into regular payments at the end of the month rather than an omniscient view from above.

Beginning in 1952, the CIFM's first large-scale construction program included 482 units for Europeans and 2,342 for Moroccans, spread across Casablanca, Rabat, and Port-Lyautey (Kenitra).[459] Approximately half of these were located in the Carrières centrales alone.[460] Composed of two rooms, a kitchen, bathroom, and an external patio, these single-story, poured concrete structures represented a subtle break from more austere colonial approach to Moroccan housing. To reduce costs, CIFM managers claimed to have exercised a precise "discipline and organization of the work sites."[461] The demand that the company turn a profit through the sale and the rental of low-cost housing also led managers to jettison earlier colonial arguments about the dwelling patterns of Muslim (and in some cases Jewish) residents. The notion that multi-story apartments were ill-suited to practices of gender seclusion, however, was translated into increasingly reductive architectural features. In one four-story, "experimental" structure located at the edge of the Cité Riad housing project, CIFM architects simply raised the *allèges* on the upper-floor windows to prevent residents from being able to look down at the patios on the

[459] Compagnie immobilière franco-marocaine, "Assemblée générale ordinaire du 25 avril 1953: Exercice 1952," Report, 2MA/1/240, CADN, 1.
[460] For a more detailed account of CIFM projects in the Carrières centrales see Jim House, "Shantytowns and Rehousing in Late Colonial Algiers and Casablanca," in *France's Modernising Mission: Citizenship, Welfare and the Ends of Empire*, ed. Ed Naylor (London: Palgrave Macmillan, 2017), 133-161; Taqi, 395-449.
[461] Compagnie immobilière franco-marocaine, "Assemblée générale ordinaire du 25 avril 1953: Exercice 1952," Report, 2MA/1/240, CADN, 2.

ground floor.[462]

The materiality of the CIFM's new housing projects became both an obstacle and a catalyst for the creation of valuable real estate. Residents moved into the first completed section of the vast housing development in the Carrières centrales toward the end of December 1952—only weeks after Casablanca's urban uprising transformed the orderly *chantiers* into spaces of violence and possibility. The lengthy construction process that turned the *qaryan* into a network of half-finished building sites created channels for unrest directed against both European residents and the colonial state [Chapter 2]. Earlier approaches by the Protectorate's urban services in the 1940s and before had sought cheap and flexible (i.e., easy to demolish) constructions methods for Moroccan housing in order to rapidly displace or reshuffle what the French considered antagonistic urban populations. In spite of periodic panics over public health threats from the *bidonvilles,* colonial municipal officials were often more wary of the solid, but informally constructed neighborhoods around the new *madīna*. The CIFM's shift to durable, concrete housing in the main neighborhood associated with anti-colonial organizing represented a novel strategy: extracting revenue for state and private investors and managing unrest by placing the urban poor in new kinds of debt relations. The same concrete that enabled modernist promises of the good life, hygienic housing, and security also rendered durable a new politics of extraction and new ties between capital, a state in the process of decolonization, and the urban poor.

In the sections of the *bidonville* targeted by the CIFM, residents were given a choice. If they willingly demolished their own structures, they became eligible to receive state-backed mortgages to purchase one of the CIFM's new two-room homes built on land they had

[462] René Durand, "L'économie mixte au service de l'habitat," *Notre Maroc*, January 1954, 51.

previously occupied. The CIFM was not itself a lending institution but rather coordinated between buyers and the Caisse Régionale Marocaine d'Épargne et de Crédit.[463] In some cases, access to credit also required residents to register with one of the Castor housing cooperatives that will be discussed in the following section. Riad and Koudiat, the two major CIFM projects in the Carrières centrales, mainly housed the families of industrial workers.[464] Less than a third of the residents actually came from the *bidonvilles* themselves. The rest were marginally better-off families from the New Medina or the European quarters.[465] French managers were quick to emphasize and even encourage socioeconomic division between families in the CIFM's housing developments.

By fixing interest rates and acting as a conduit between potential buyers and state-backed lenders, the CIFM connected a new network of agencies and actors to the problem of low-cost housing. Modernist housing initiatives like the projects in the Carrières centrales were not simply about imagining new social forms—they were a means of creating new financial and material links between urban residents, capital, and the central state.[466] In their sociological surveys of the *qaryan,* CIFM managers were well aware that in order to provide down payments on their units, many industrial workers had also sought out loans from their employers. The same applied to domestic workers living the Riad and Koudiat.[467] Credit and debt were the means of transforming Moroccan workers into a new kind of urban subject:

> The characteristic fact that emerges from the study of these housing projects is, in fact, *the attraction of property.* It is the feeling of being a home owner that provokes these

[463] René Durand, "L'économie mixte au service de l'habitat," *Notre Maroc*, January 1954, 47-53.
[464] Compagnie immobilière franco-marocaine, "Étude sur les populations habitant dans des cités construites par la Cie immobilière franco-marocaine," undated (c 1957), 33408-00-ET, CND, 7.
[465] Compagnie immobilière franco-marocaine, "Étude sur les populations habitant dans des cités construites par la Cie immobilière franco-marocaine," undated (c 1957), 33408-00-ET, CND, 3.
[466] Cf. Rabinow, *French Modern*, 3.
[467] Compagnie immobilière franco-marocaine, "Étude sur les populations habitant dans des cités construites par la Cie immobilière franco-marocaine," undated (c 1957), 33408-00-ET, CND, 12.

> renovations [of the built environment], because the inhabitant is proud of his home and aims to make it as agreeable and as comfortable as possible….The mentality of an elite (in relative terms obviously also but in a real sense) living in homes which they own, in clean and well ventilated projects where communal life is organized on a modern basis, commercial centers, schools, clinics, and youth centers, etc…All activity is oriented toward economic goals, toward work and improving standards of living. It is clear that the idle have no place in these cities. *The people there are peaceful.*[468]

In the modernist vision behind the CIFM's housing initiatives, "the attraction of property" would pacify a neighborhood that had already demonstrated its attachment to anti-colonial nationalism and revolutionary Communism. The "elite mentality" CIFM managers hoped to create through homeownership, however, rested on debt. As the Carrières centrales morphed into a patchwork of state, CIFM, and corporate housing projects, with large sections of *bidonvilles* remaining, new links of material attachment and financial dependency emerged as a means of anchoring what the military sociologist Jean Ratier had once described as a "nomadic" labor force.[469] The final sentence of one CIFM report suggested the scope of this project, arguing that "the mortgage system in practice thus results in carrying out a veritable selection of neo-citizens."[470] Though directed toward decreasing anti-colonial unrest, this project retained its relevance for imagining forms of urban authority in a new nationalist context.

[468] Emphasis in the original. Compagnie immobilière franco-marocaine, "Étude sur les populations habitant dans des cités construites par la Cie immobilière franco-marocaine," undated (c 1957), 33408-00-ET, CND,14.
[469] Jean Ratier, "Étude sociologique du bidonville des Carrières centrales" (Centre des hautes études administratives sur l'Afrique et l'Asie modernes, [undated, circa 1950]), AM, 25.
[470] Compagnie immobilière franco-marocaine, "Étude sur les populations habitant dans des cités construites par la Cie immobilière franco-marocaine," undated (c 1957), 33408-00-ET, CND, 3.

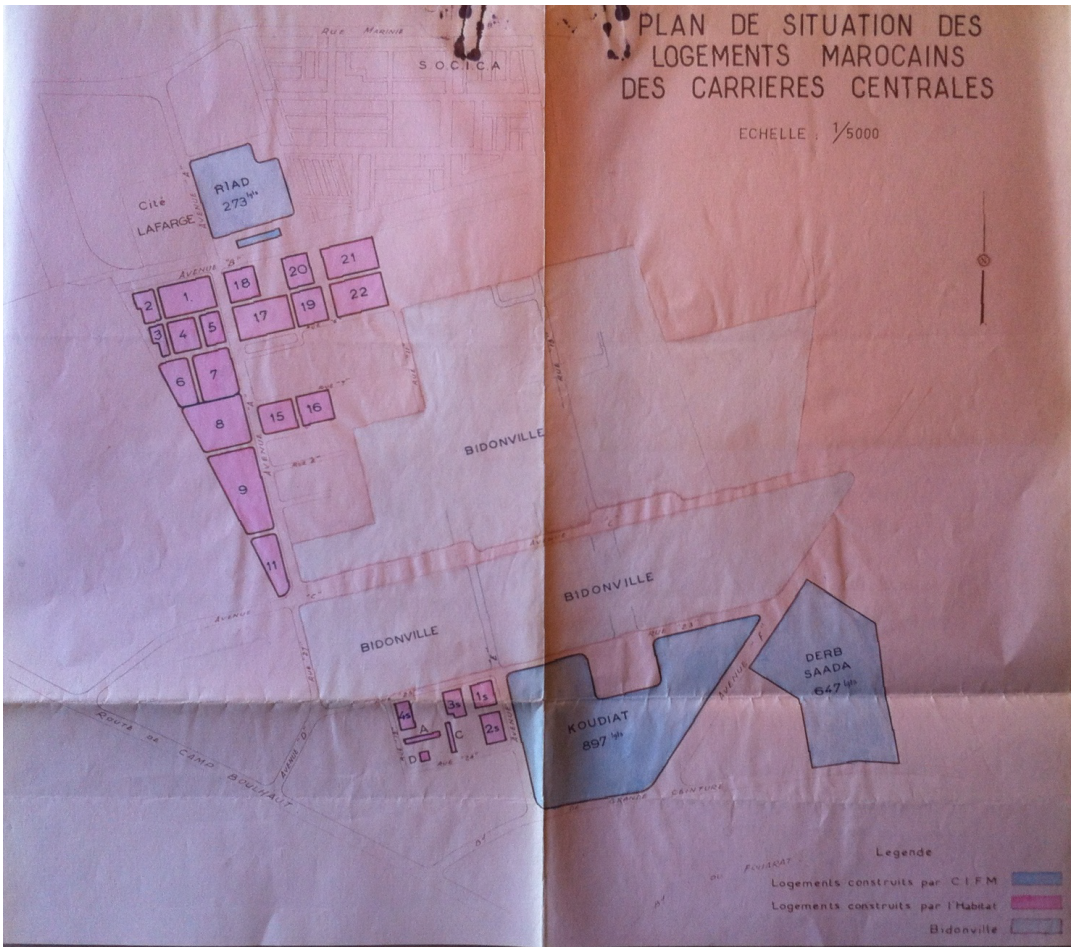

Figure 10: "Plan de situation des logements marocains des Carrières centrales," 2MA/1/240, CADN.

Documentation on the CIFM provides a window into how experts, investors, and officials envisioned urban futures beyond the Protectorate. In one meeting of the Housing Service and the Public Works Administration in October 1954, René Girard claimed that the state's resources could no longer go toward "European constructions" but must be devoted to resolving the growing crisis in the working class and slum neighborhoods of the Residency.[471] In the meeting report, an editor has crossed out "European" and written "bourgeois." A minor alteration of the written record, but such modifications were part of a wider attempt to envelop the racializied

[471] Délégation aux affaires urbaines de Casablanca, "Compte rendu d'information sur la réunion tenue à Rabat le 30 octobre 1954," November 2, 1954, 1MA/200/303, CADN.

divisions of colonial urbanism within hierarchies of class and of expertise—dividing lines that could cut across the transition to independence. Similar linguistic shifts affected the institution itself, as managers retitled the Compagnie immobilière franco-marocaine, the Compagnie immobilière et foncière marocaine during the early years of decolonization.

The postcolonial future of the CIFM was assured by an agreement on May 31, 1957 with the Sharifian state to engage in a massive nation-wide housing construction program. The company weathered the first years of decolonization with few changes to its personnel, administrative structure, or the colonial idioms that it continued to mobilize in public performances. In an article from 1957, a reporter from *Construire* described a ceremony commemorating the opening of new work-sites at Aïn Chock and Diar El Salam where the company's directors and new Moroccan officials from the Ministry of Public Works gathered for a cocktail hour followed by a Polo match.[472] A collection of photographs by the art and architectural photographer, Marc Lacroix, portray the event. In the series, CIFM managers stand alongside youthful Moroccan administrators in double-breasted suits followed by images of construction sites in Yacoub-el-Mansour, Damremont, Jawadieh, Aïn Chock, and Diar Daada four months after the opening ceremonies.[473] Arrayed across various reports and professional journals, series of images like these served as visual arguments for a particular understanding of postcolonial cooperation. French and Moroccan officials stand out in these sequences as the primary actors in the country's housing drama—enjoying courteous and professional relations with one another. The second half of the series shows stark geometric frames of iron and planes

[472] "Visite des chantiers ouverts par la C.I.F.M. à Diar El Salam et à Aïn Chock," *Construire* 888 (July 20, 1957), 279.
[473] "Compagnie immobilière franco-marocaine," undated [circa 1961], Centre de ressources documentaires de Casamémoire. This undated report, signed as a "gift from M. Renaud Bruel," located in the small library of the Casamémoire association.

of concrete punctuated only by the darkened, distant figures of construction workers. Alongside images of active construction sites, the obligatory "view-from-above," also suggests the orderly, symmetrical nature of new housing developments. Lacroix's work inscribes the CIFM within the visual vocabulary of modernist architecture and modernization projects elsewhere while at the same time setting up an idealized vision of how authority and expertise interact within the postcolonial state. The first photograph in the collection shows the young Moroccan nationalist and recently appointed Minister of Public Works, M'Hamed Douiri, standing in the foreground at a microphone while a French official looms, arms crossed, face somewhat blurred, in the background.

Figure 11: Douiri Speaking at Opening Ceremony

"Compagnie immoblière franco-marocaine," undated [circa 1961], Centre de ressources documentaires de Casamémoire.

The CIFM contained within its institutional structure, imagery, and programs—as well as the materiality of the housing it produced—a blueprint for a particular kind of postcolonial future—a future that involved reassembling relations between Moroccan elites, the urban poor, the central state, and French experts. The company's managers claimed a mantle that extended far beyond "the simple question of housing" devoting themselves to "a natural selection of the

urban proletariat," a "true movement of the masses towards progress," and "a successfully evolution of the country."[474] Rather than tempering this newest version of the civilizing mission, decolonization in Morocco only accelerated it. The dissolution of the Protectorate initiated a process whereby state actors renegotiated their commitments to the poorest members of urban society while maintaining existing class relations and austerity policies. On the one hand, the newly independent Moroccan administration—structurally more or less identical to the French colonial state—promised to extend privileges previously held by European residents to *all* Moroccans. Home ownership was a core—and often forgotten—aspect of this project in the early years of decolonization. As the first Moroccan Minister of Public Works, Douiri declared in 1958 that it would be possible in the future for every Moroccan to own their own home.[475] At the same time, the postcolonial state made the creation of entrepreneurial, self-sufficient urban subjects a key priority. This meant in essence not only lessening the state's commitment to redistributive urban policies but also reducing the threat of unrest from working-class communities that had learned the efficacy of open revolt during the final years of the Protectorate.

The postcolonial Ministry of Public Works expanded upon late colonial crisis technologies for harnessing the labor of the urban poor and generating real estate value at minimal cost. In 1958 a massive fire in the Derb Jdid *bidonville* in Casablanca (the city's third largest after Beni Msik and the Carrières centrales) left nearly 2,500 families homeless and provided the administration with a unique opportunity to rehouse slum residents with relatively little resistance.[476] To rapidly erect a new city for nearly 10,000 residents, Douiri's Ministry relied on two forms of partially state-funded housing finance: the *lotissement économique* and

[474] Compagnie immobilière franco-marocaine, "Étude sur les populations habitant dans des cités construites par la Cie immobilière franco-marocaine," undated (c 1957), 33408-00-ET, CND, 15.
[475] "La cité du Derb Jdid," *Construire*, September 27, 1958, 387.
[476] "La cité du Derb Jdid," 385.

the *lot évolutif.*

For the *lotissement économique,* residents who could furnish at least 100,000 francs received a ten-year loan to purchase a plot of state-owned land and up to 250,000 francs for the construction of a private residence. Reimbursed in monthly payments of 2,600 francs each month, the loans for construction work alone carried a fixed interest rate of 2.48%.[477] In spite of such low-interest loans, these sums remained inaccessible to most residents of Derb Jdid. For those with even less income and no funds for a down payment, the Ministry created the *lot évolutif.* The *lot* was based on the model of the *bail emphytéotique*—a form of long-term leasing agreement in which the tenant could gain ownership of the structures built on a piece of rented property without having ownership of the land itself. In principle, the forty-year leases offered to low-income residents of Derb Jdid for their *lots évolutifs* would be renewable, but only on the condition that the property was maintained according to the satisfaction of the lender—the postcolonial Moroccan state. In both cases, residents were required to build using one of the standardized models provided by the housing authority and to submit to regular inspections during the construction process.[478]

The different financial packages available to the residents of Derb Jdid also corresponded to different materialities and temporalities of housing. In the immediate aftermath of the fire, only those families with funds to invest in homeownership would have the opportunity to either purchase or rebuild a home *en dur.* The neighborhood's poorest residents were rehoused in emergency shelters designed by Elie Azagury—one member of the first generation of Moroccan

[477] "La cité du Derb Jdid," 385.
[478] Arnaud de Montmarin, "Les conceptions actuelles en matière d'habitat économique au Maroc et leur application à la reconstruction du Derb Jdid à Casablanca", *Supplément aux annales de l'Institut technique du bâtiment et des travaux publics* 150 (June 1960), 616.

modernist architects.[479] In theory these lightweight, one-room emergency models could be later replaced by permanent housing. Azagury's emergency units were emblematic of the search for the most "flexible solution" to urban poverty in Morocco—designed so that "if economic conditions improved, it will be possible to combine two different lots to house a family under normal conditions, and furthermore, at the next stage, it will be possible to build up and construct a second story."[480] In this context, a "flexible solution" meant building the postcolonial promise of single-family home ownership into structures that embodied the politics crisis and scarcity.

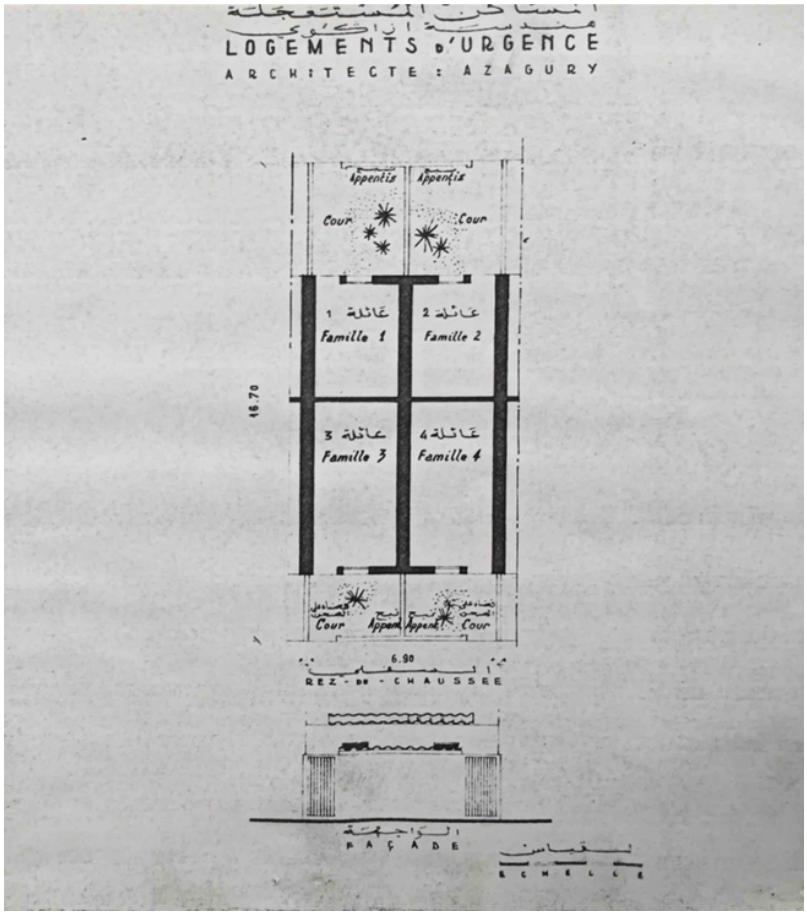

Figure 12: Typology for Emergency Housing

Circonscription de l'urbanisme et de l'habitat, "Catalogue de plans-types de logements élaborés pour le Service de l'habitat" (Rabat: Ministère des travaux publics, 1969), R205, BMHPV.

[479] De Montmarin, 628.
[480] De Montmarin, 628.

Arnaud de Montmarin, a French engineer who headed the Urban Planning Administration of the Ministry of Public Works during decolonization and remained in Morocco as a technical advisor, cast Derb Jdid as a model *bidonville.* With most heads of household in Derb Jdid earning less than 5,000 francs per month, de Montmarin noted that residents of the neighborhood remained definitively beyond the reach of the real estate market.[481] Contemplating the policy of direct construction by the state, he cited Henri Prost's spectacular realizations during the early years of the Protectorate, but also supported the administration's creation of a housing finance sector in the form of the Caisses Régionales d'Épargne et de Crédit. Rather than simply guaranteeing the smooth functioning of the financial sector, however, the postcolonial state, for de Montmarin, had to mimic it—becoming a creditor for the urban poor.[482] Like efforts to mold urban elites into model capitalists, state-lead projects to transform the urban poor into paradoxically autonomous and indebted subjects spanned the period of decolonization. Reconstructed *bidonvilles* like Derb Jdid became sites for re-imagining not only urban politics but the contours and nature of the state itself.

The explicit commitments of French administrators to provide housing for low-income Moroccan residents arrived late and remained partial during the Protectorate—couched in the paternalistic language of the civilizing mission and in anxieties over unrest and contamination. At the end of the 1950s in contrast, officials like Douiri affirmed the state's responsibility to provide housing for all of its citizens. At the same time, the principle of home ownership for all became a means of transforming state and parastatal institutions like the CIFM into creditors. Debt became fundamental to the relationship between the urban poor and the new postcolonial state. And yet these debts, like the many of the physical structures built during the slum clearance

[481] De Montmarin, 615.
[482] De Montmarin, 615.

campaigns of the 1950s, were cast as temporary. They would prove anything but.

"Builders in the Soul": Work-site Organization and the Cooperative Movement

Alongside new housing finance strategies, techniques of work-site organization—most notably housing cooperatives—were bound up with the postcolonial project of delivering not just full housing, but housing ownership to all citizens while at the same time rendering the urban poor responsible for much of the cost and the physical labor involved in construction. At times, officials presented the cooperative movement as an alternative to top-down, state-run housing initiatives—a means of decentralizing approaches to Morocco's housing crisis. Rather than providing urban residents with greater autonomy, however, cooperatives allowed urban experts to harness local forms of knowledge and labor that had previously appeared threatening. Officials in the 1950s aimed to capture construction techniques rooted in the experience of life in the *bidonvilles* while retaining oversight through the application of standardized materials and models. While new finance strategies adopted by the CIFM and the postcolonial state tied former residents of the *bidonvilles* to their new neighborhoods through low-interest loans, new forms of work site management enrolled Moroccan participants into the project of literally building the nation.

Like prefabrication, public-private housing companies, and low-interest mortgages, the techniques of work-site management that would shape the first decade of urban projects under the postcolonial state had their origins in the final years of French rule. In 1954 colonial officials imagined youth unemployment as yet another of the urban problems precipitating the Protectorate into crisis. To mediate the forms of unrest that supposedly resulted, officials envisioned a program of youth work sites whose goal would be "to reduce unemployment, to contribute to the social recovery of a mass of idlers currently subjected to a stark moral and

physical deterioration, [and] to engage in the task of educating young people who are beyond the reach of the school system."[483] As a "solution that must be highly flexible," these youth *chantiers* were pedagogical spaces of bodily discipline and moral management whose value lay in the fact that they could be deployed anywhere and for any duration.[484] Even more strikingly, the French architects of this project adopted certain Moroccan nationalist arguments about territorial integration, asserting that the connections created between urban and rural work sites would have the advantage of "linking people to the country in which they were born."[485] The experimental sites for testing youth *chantiers,* however, where primarily located in the suburbs of Casablanca. In 1955, the Resident General visited and inaugurated a handful of these *chantiers du chômage* (unemployment worksites) around the city.[486]

New medical clinics also extended forms of work-site discipline and surveillance to the internal workings of the bodies of Moroccan laborers.[487] Casablanca's Specialized Occupational Health Center collected personalized patient files and generated statistics on everything from infection rates to psychological disorders.[488] All workers who passed through the clinic received a radiological exam upon each visitation.[489] Opening up workers' bodies to inspection through X-rays coincided with expert attempts to grasp the link between psychological dispositions, the organization of work-sites, and work place accidents. French occupational medicine examined how the rhythms of the workday, climatological factors, and the psychological impact of prior

[483] "Compte-rendu des réunions tenus le mardi 9 Mars 1954 au centre éducatif des chênes et le vendredi 26 mars au Service central de la jeunesse et des sports," 1MA/1/219, CADN, 2.
[484] "Compte-rendu des réunions tenus le mardi 9 Mars 1954 au centre éducatif des chênes et le vendredi 26 mars au Service central de la jeunesse et des sports," 1MA/1/219, CADN, 2.
[485] "Compte-rendu des réunions tenus le mardi 9 Mars 1954 au centre éducatif des chênes et le vendredi 26 mars au Service central de la jeunesse et des sports," 1MA/1/219, CADN, 2.
[486] Girard to Directeur du cabinet de M. le Résident Général, March 23, 1955, 1MA/1/219, CADN.
[487] Compare this with colonial doctors' disregard for Moroccan laborers during the interwar period. Amster, 124-125.
[488] "Médecine du travail et entreprise," *Construire*, December 27, 1958, 549.
[489] "Médecine du travail et entreprise," 550.

accidents all shaped the probability of a fall from scaffolding or a dropped load of cinder blocks.[490] Securing the construction site meant determining how and under what conditions the bodies of workers encountered potentially risky matter. When translated outside of the metropolitan context, however, French observers argued for additional surveillance over Moroccan victims of workplace accidents for the duration of their treatment. Fearing that injured workers would seek to heal themselves "with fantasy"—a reference to forms of saintly or Qur'anic public healing—or return to rural communes while still receiving compensation from their employers, administrators argued for forms of occupational medicine that required laborers to remain in place for regular check-ups.[491]

[490] Jean Perrin, "Les accidents du travail et leurs cause psycho-physiologique," *Laboratoires du bâtiment et des travaux publics* (February 23, 1944); Hanoteau, "La prévention des accidents d'échafaudage," *Laboratoires du bâtiment et des travaux publics* (June 28, 1945).
[491] Barbarin, "La main d'oeuvre marocaine d'un grand chantier des travaux publics" (Centre des hautes études administratives sur l'Afrique et l'Asie modernes, 1950), E3195, AM, 14.

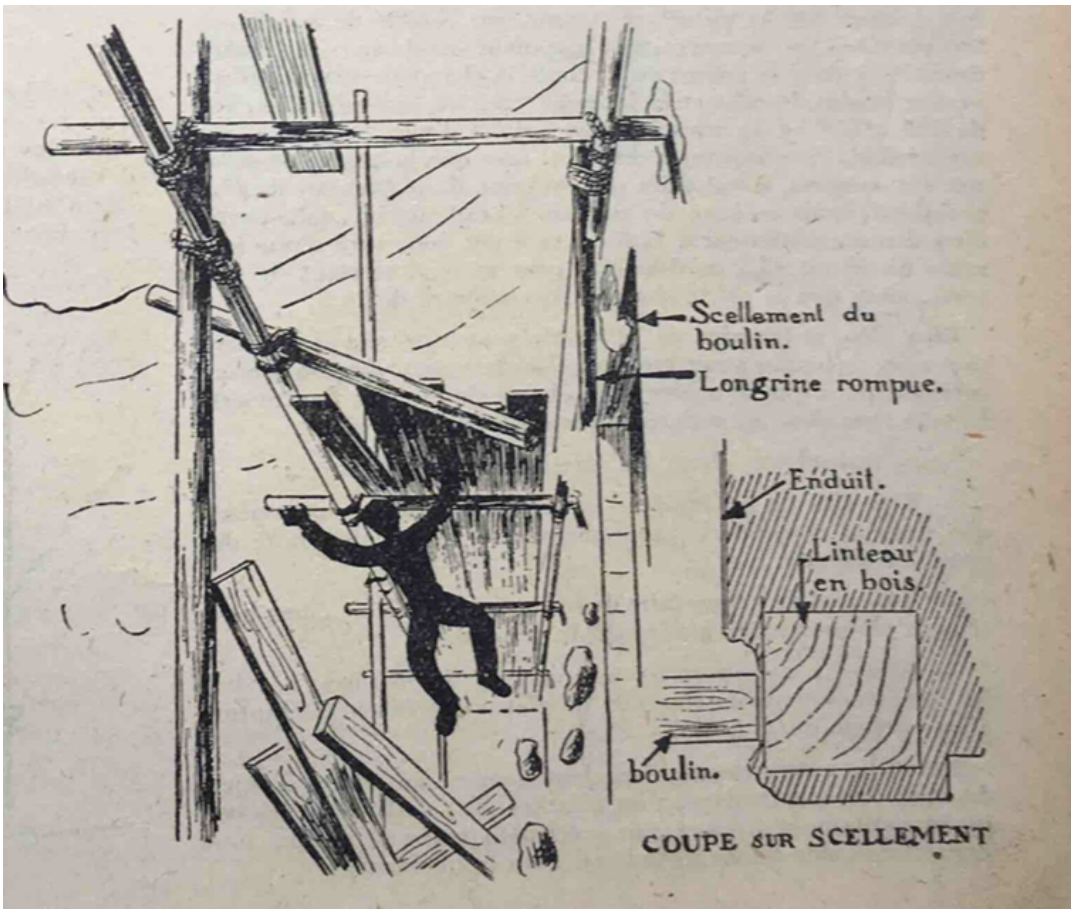

Figure 13: Representation of a fall from scaffolding in French public works journal.

Hanoteau, "La prévention des accidents d'échafaudage," *Laboratoires du bâtiment et des travaux publics* (June 28, 1945).

Concern about the growing numbers of unemployed Moroccans in cities and their capacity to revolt also spurred the creation of rural work sites to discourage residents of the *beld* from immigrating to Casablanca and joining the ranks of the jobless. Echoing the language of "nomadism" that sociologists and administrators had used to describe Casablanca's overly mobile labor force, officials spoke of the need to "attach the agricultural worker to the land."[492] Rural construction sites represented a stopgap measure for doing so. More radical proposals for

[492] A. Boutales, Ministre du Travail et des questions sociales to Ministre des Finances, February 8, 1956, 1MA/1/219, CADN; Jean Ratier, "Étude sociologique du bidonville des Carrières centrales," 25.

relieving unemployment existed as well. Toward the end of 1954, urban officials considered sending large numbers of Moroccan workers, recently rendered jobless after the completion of Port Lyautey (Kenitra), to carry out road building projects in Ethiopia.[493] An American company, The Imperial Highway Authority, began recruiting laborers from construction sites in Morocco to work on a vast program of infrastructural expansion in the Horn of Africa. The administration encouraged these efforts but remained skeptical that the company would find skilled Moroccan workers to fulfill their need for specialized laborers.[494] In these examples, work sites, whether in urban settings, rural communities, or abroad, served as a means of managing the flow of workers. As a kind of valve for dealing with unemployment and a space that supposedly instilled bodily and moral discipline, the French *chantier* represented a "flexible solution" for a colonial administration in crisis.

At the same time, the top-down structure of state-run work sites proved costly and risked provoking even more militancy from the laborers whom Protectorate officials hoped to manage. Housing cooperatives on the other hand had the advantage of redistributing responsibility for construction among working-class Moroccans while allowing the French administration to govern at a distance through code enforcement. Cooperatives appeared on paper as a radically low-cost solution—one that could be financed through small, low-interest, state-backed loans—because they removed labor from the equation. Easing pressure on late-colonial budgets, however, was only one of the advantages that cooperatives appeared to afford. French observers of Morocco's housing crisis, such as Emmaüs's founder Abbé Pierre, suggested to the Sultan Muhammad V that a large-scale cooperative movement would be essential not only to address

[493] Husson, Contrôleur Civil, Chef du territoire de Port Lyautey to Directeur de l'Intérieur, December 23, 1954, 1MA/1/219, CADN.
[494] Loiret, Chef de la Mission française de liason to Directeur de l'Intérieur, January 29, 1955, 1MA/1/219, CADN.

housing shortages but to instill a sense of national belonging on the eve of independence. Referencing his own charitable organization in France, Abbé Pierre argued that "any young country, if it wants to avoid falling into anarchy and discouragement, must endeavor to realize certain grand national projects."[495] He went as far as to suggest that the state establish a "Mouvement Marocain du Logement" that would act as the equivalent of the Union marocain du travail (UMT), the country's largest labor union, in the domain of housing.[496]

As a set of organizational strategies, the cooperative model was exclusively applied to the problem of lodging Muslim Moroccans. While the movement had its origins in postwar reconstruction efforts in Europe, French officials considered cooperatives ill-suited and undesirable for the housing needs of Europeans in the Protectorate.[497] In the assertion that, "the Moroccan is a builder at heart" officials found justification for this new means of managing of low-cost housing construction in Casablanca.[498] Within the French administration, characterizations of Moroccan culture typically arose in debates between opponents and supporters of Michel Écochard's vision of large, state-financed housing projects. As with the architectural inclusion of patios in Écochard's *trame 8x8*, assertions of cultural difference among advocates of the cooperative movement imagined Muslim residents as requiring little in terms of material comfort [Chapter 2]. As recent arrivals from the *bled* (countryside), the argument went, former inhabitants of the *bidonvilles* were accustomed to more austere living arrangements. While dispensing with material comforts, advocates of cooperatives cast Moroccan residents as

[495] Cited in "Note sure la création au Maroc d'un mouvement d'aide aux sans-logis et aux mal-logés," [undated, circa 1953], 1MA/200/303, CADN.
[496] Cited in "Note sure la création au Maroc d'un mouvement d'aide aux sans-logis et aux mal-logés," [undated, circa 1953], 1MA/200/303, CADN.
[497] Although legislation that allowed groups of veterans to organize themselves into housing cooperatives for the purpose of obtaining low-interest loans existed since the *dahir* of June 20, 1932 these projects were neither widespread nor designed to resolve the housing crisis in general.
[498] De Montmarin, 616.

dependent upon certain forms of sociality—forms that cooperatives were designed to encourage. They criticized Écochard's projects for lacking "human warmth."[499] Dismissing modernist constructions as "soulless barracks that kill the spontaneously communitarian spirit of Moroccans," supporters of cooperatives pushed for a model that fostered collective participation by requiring residents to invest uncompensated labor and take out long-term loans.[500]

One cooperative model, known as "Castor" was tested in Fedala (Mohammedia) during the early 1950s. From their origins during postwar reconstruction in France, Castor cooperatives represented one of the more decentralized cooperative models and the most dependent upon the labor of individual participants. Each member was required to fulfill a work commitment of between 1,500 and 2,000 hours on an assortment of different construction projects. To assure attention to detail, housing was determined according to a lottery system, and members would not be assigned a unit until all of the homes were complete. Rather than receiving titles at the end of their work commitments, however, members remained beneficiaries, and the project as a whole remained collective property.[501] Proponents of Castor methods in the Protectorate argued that as a set of organizational and construction technologies, Castor cooperatives were ideally suited to conditions in Morocco. During the testing phases, one advocate suggested that the model's capacity to rapidly provide "modest and simple constructions"—though unattractive to Europeans—could appeal to Moroccan residents.[502] The ideal participant for a Castor was

[499] "Note sure la création au Maroc d'un mouvement d'aide aux sans-logis et aux mal-logés," [undated, circa 1953], 1MA/200/303, CADN.
[500] "Note sure la création au Maroc d'un mouvement d'aide aux sans-logis et aux mal-logés," [undated, circa 1953], 1MA/200/303, CADN.
[501] P. Padovani, "Étude sur l'habitat musulman actuel," *Supplément aux annales de l'Institut Technique du Bâtiment et des Travaux Publics* 135–136 (April 1959), 9. It is not clear that all Castor cooperatives remained collective property after their completion. In some cases, members did eventually receive titles to their homes after a ten year period. Roger Maneville, "L'expérience 'Castor' aux Carrières centrales de Casablanca," *Notes marocaines* 7 (1956), 2.
[502] R. Vaez-Olivera, "Construction marocaines faites par des 'Castor,'" Supporting documents attached to a note for Secrétaire Général du Protectorat, May 21, 1954, 2MA/1/237, CADN.

someone "without technical competencies, without capital, and without a salary [who] devotes their leisure time to the edification of their own home."[503] Descriptions of the Fedala test site invoked images of communal labor and a harmony achieved through engagements with materials themselves:

> Gathered together in groups, "Castor" subjects, absorbed during the day by their professional occupations, work on their construction projects during their hours of liberty and, particularly, in the evening when men, women and children collaborate in the transportation of materials, the mixing of mortars, and the placement of stones.[504]

On the cooperative construction site, the organization of family and the nation played out through the "placement of stones" and the "mixing of mortars"—the material organization of the urban environment.

The Moroccan laborers who participated in Castor projects in Casablanca were overwhelming from the Atlantic regions of the Chaouia and Doukkal with smaller contingents from the Sous and Marrakesh. Mostly married men, the group comprised industrial laborers, construction workers, or small shop owners, tanners, and other artisans.[505] The Public Works Administration provided the materials for construction—including sand, cement, gravel, iron for reinforcement, and a total of over 11,000 cinder blocks for around four hundred structures.[506] Each team was composed of five workers—typically overseen by a European technician—and was responsible for completing between four and five houses. During the program's testing phase, the four pilot teams each included a mixture of masons, laborers, merchants, and other

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[503] "A/s des conditions de mise en oeuvre des techniques Castor" [undated, circa 1954], attached to a letter, George Hutin to Directeur des Finances, 2MA/1/237, CADN.
[504] Conseil du Gouvernement, Section marocaine, "Séances des 8,9,10 et 11 Décembre 1952," (Casablanca: Imprimérie Ifram, 1953), 144. Cited in Najib Taqi, *Jawanib min dhakira Karyan Santral-al-Hay al-Muhammadi bi-l-Dar al-Bayḍaʾ fi-l-qarn al-ʿashrin muhawala fi-l-tawthiq* (Casablanca: A. Retnani Les Éditions la Croisée des Chemins, 2012), 147.
[505] Roger Maneville, "L'expérience 'Castor' aux Carrières centrales de Casablanca," *Notes marocaines* 7 (1956), 4.
[506] Maneville, 5.

artisans—the idea being that those more accustomed to construction work would bring the other members up to speed.[507] In practice, however, teams were often created more on the basis of "personal affinities" and other forms of relatedness than on the organizational principles of the Castor model.[508]

The CIFM became a major supporter of Castor projects—helping to finance and organize cooperatives in Aïn Sebaa on the outskirts of Casablanca.[509] Such projects enrolled Moroccans, whose homes in the *bidonvilles* the municipality had recently demolished, into the reconstruction of new neighborhoods. Local *contrôleurs civils* and officers of indigenous affairs initially oversaw the day-to-day progression of these cooperatives. The *contrôleurs* managed the recruitment, administration, and inspection of the work-sites, not in their capacity as state officials, however, but as "volunteers."[510] Proponents of the model endeavored to preserve the impression of autonomy, as though a low-level political official assigned to the Castor were a member like any other—one who just happened to be suited to administrative tasks. At the same time, it quickly became apparent to members of the Ministry of Interior that engineers or at least inspectors with some technical training were an essential presence if cooperatives were to expand beyond a few test cases along the Atlantic coast.[511]

As one Public Works representative reluctantly pointed out, Castor test sites in Rabat, Casablanca, and Fedala depended upon a great deal of interference by the administration and failed to function as autonomously as expected.[512] Moroccan members of the cooperatives also found ways to avoid the forms of work-site discipline that the Castors were designed to inspire.

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[507] Maneville, 6.
[508] Manville, 7.
[509] Maguy Mortier, "L'exemple des Castors," *Le matin* January 18, 1954" 4. 2MA/1/241, CADN.
[510] "A/s des conditions de mise en oeuvre des techniques Castor" [undated, circa 1954], attached to a letter, George Hutin to Directeur des Finances, 2MA/1/237, CADN.
[511] Capitant, Directeur-Adjoint de l'Intérieur to Secrétaire Général du Protectorat, July 19, 1954, 2MA/1/237/CADN.
[512] Vaez-Olivera, "Construction marocaines faites par des 'Castor.'"

An observer of the test sites in Fedala noted that members of the Castor—rather than sacrificing their own labor—used loans acquired through the administration or the CIFM to hire Moroccan specialists, *muʿallimūn,* to perform most of the actual building. At times, cooperative members also relied on extended kinship networks to carry out construction work.[513] The practice of paying *muʿallimūn* directly to take over work of construction and of enrolling family members through the exchange of "gifts and meals," subverted the aims of the cooperative movement as understood by its supporters within the administration.[514] If the only goal of the Castors had been the rapid erection of low-cost housing or the pacification of unrest by promoting new forms of investment in urban space, it is not immediately apparent why the contractual labor of Moroccan craftsmen and the uncompensated labor of local kinsmen would have constituted the two poles of administrative anxiety. If on the other hand, cooperatives represented a scaled-down model for organizing the nation—one that could weather the transition to independence—then kin and craft emerged as threats to the kind of future envisioned by late-colonial bureaucrats. Public works officials concluded that Castors had to "depend greatly on the administration of the inspection authorities."[515] Reducing official involvement risked encouraging an independent class of Moroccan skilled workers who relied on kin-based forms of solidarity to avoid the technical oversight of French engineers and the time-work discipline of the *chantier.*

In spite of skepticism over the Castor experiments, state planners pushed to expand the cooperative model in Rabat, Fez, Meknes, and Casablanca. In 1955 nearly all new constructions in the Carrières centrales were built using the Castor system.[516] Most members in the Carrières centrales were industrial laborers who had to fulfill their commitments to the cooperative after

[513] Vaez-Olivera, "Construction marocaines faites par des 'Castor.'"
[514] Vaez-Olivera, "Construction marocaines faites par des 'Castor.'"
[515] Vaez-Olivera, "Construction marocaines faites par des 'Castor.'"
[516] "L'habitat au Maroc: Réalisations 1955," *Construire*, February 25, 1956, 114.

work hours. As was the case with personal loans between workers and industrialists, officials saw the cooperatives as creating new forms of attachment between Moroccan laborers and their employers.[517] Urban administrators called upon factory owners to participate by purchasing necessary materials on behalf of their workers and by putting their technicians at the service of the cooperatives.[518] A corporatist social vision lay at the heart of these projects. Rather than providing spaces of autonomy, cooperatives aimed to encourage new forms of sociality that disrupted solidarities based on kinship while further pushing Moroccan working-class families into debt.

Decolonization provoked no immediate shifts in the Ministry of Public Works or the Ministry of Interior's support for the Castor model. The independent Moroccan state continued to encourage cooperatives through the same financial mechanisms as those tested during the rebuilding of Derb Jdid. Small, low-interest loans that could rarely cover the cost of building new housing from scratch were designed to force residents to pool their funds and their labor.[519] Postcolonial planners maintained that the combination of cooperative construction and low-interest loans represented a "newer and more original…formula [that] responds better to the tastes of the majority of Moroccans, builders in the soul.…"[520] At the same time, the postcolonial administration leveled increasingly harsh critiques against the Moroccan residents of new housing projects for their perceived failure to engage in maintenance work and the modification of their new homes. As one planner argued "in the face of the disastrous

[517] Capitant, Directeur-Adjoint de l'Intérieur to Contrôleur Civil, Chef de la région de Casablanca, September 13, 1954, 1MA/200/303, CADN.
[518] Capitant, Directeur-Adjoint de l'Intérieur to Contrôleur Civil, Chef de la région de Casablanca, September 13, 1954, 1MA/200/303, CADN.
[519] Circonscription de l'urbanisme et de l'habitat, "Éléments d'une politique de l'habitat" (Ministère des Travaux Publics, 1957), R188, BMHPV, 4.
[520] Claude Vignaud, "Nouvelles cités d'habitat économique : Maroc 1960-1962" (Ministère des Travaux Publics, 1962), R7, BMHPV, 8.

transformations that the new neighborhoods built by the State have undergone…it is important to rapidly undertake…an educative action for the urban population, in order to teach them how to better profit from the housing and the land that will be provided for them."[521] Such observations became an argument for even further abandoning urban policies based on the central state's direct involvement and for pushing strategies such as cooperatives that allowed officials to govern at a distance. Douiri and the first generation of Moroccan Public Works officials saw low-interest loans, cooperatives, and public-private corporations as the means to ensure a "harmonious evolution" of Moroccan cities—adhering to the "modern urbanism" mapped out in the final years of the Protectorate while responding to the further reduction of state-budgets during decolonization.[522]

In an interview, Douiri framed ongoing slum clearance in the kingdom as the result of popular will and called for the continued "dynamic mobilization of all" in the "struggle against slums."[523] The language used to promote new housing finance measures and construction cooperatives echoed nationalist rhetoric more broadly:

> We are aware of our compatriots' will and their great desire to abandon their provisional dwellings for happier housing projects. This will must be realized through the continuous efforts of all, by a direct collaboration between private interests and the State; from this intimate association fruitful results will be born...Thus, by mobilizing all of our efforts, those of the State and those of individuals, to realize this great national enterprise, we have answered his Majesty's call by contributing to the building of a new Morocco.[524]

Douiri emphasized that programs such as the cooperative movement were not utopian, but instead "realistic solutions" for "integrating the underprivileged into urban life."[525]

As the cooperative movement gathered momentum in Morocco, labor activists and left-

[521] Circonscription de l'urbanisme et de l'habitat, "Éléments d'une politique de l'habitat," 4.
[522] Circonscription de l'urbanisme et de l'habitat, "Éléments d'une politique de l'habitat," 7-8.
[523] Circonscription de l'urbanisme et de l'habitat, "Éléments d'une politique de l'habitat," 7.
[524] Circonscription de l'urbanisme et de l'habitat, "Éléments d'une politique de l'habitat," 7-8.
[525] Circonscription de l'urbanisme et de l'habitat, "Éléments d'une politique de l'habitat," 7-8.

wing journalists observed efforts on the other end of the Maghrib to formulate critiques of the postcolonial state's housing policy. One journalist for *L'avant garde* produced a mostly favorable assessment of the Tunisian state's experiments with cooperative construction. Echoing the language of modernist planners, the author affirmed that the cooperative movement had created "a sentiment of human dignity that constitutes a form of social progress in the domain of hygiene, solidarity, and responsibility."[526] At the same time, the Tunisian state's projects also provoked resistance: "bulldozers…often received with thrown stones."[527] The cooperative movement was widespread in Algeria as well. There the French Ministry of Veterans Affairs provided financial support for construction cooperatives specifically for Muslim veterans. The administration supported more grass-roots movements as well touting their "more flexible formula" for addressing Algeria's urban housing needs compared to large public H.L.M. projects.[528] Cooperative models in Algeria aimed to bring military discipline to the construction site and as a result became a core part of the program of massive displacements of urban and rural Algerians as part of France's counterinsurgency campaign during the Revolution.[529] As housing and urban policies across the Maghrib were met with protest, state-organized cooperatives provided a way for officials to place the responsibility for building and financing onto low-income residents while continuing to guide the construction process at a distance.

The potential for cooperatives to subvert the aims of modernist planning, however, was not lost on French experts who continued to work in Morocco during decolonization. As de

[526] "Tunisie: Coopératives et investissement du capital humain pour résoudre le problème de l'habitat," *L'avant garde*, June 4, 1960.
[527] "Tunisie: Coopératives et investissement du capital humain pour résoudre le problème de l'habitat," *L'avant garde*, June 4, 1960.
[528] Padovani, 9.
[529] Padovani, 7. For discussions of strategic displacements during the Algerian Revolution see Pierre Bourdieu and Sayad Abdelmalek, *Le déracinement: La crise de l'agriculture traditionnelle en Algérie* (Paris: Éditions de Minuit, 1964).

Montmarin pointed out in a presentation to French and Moroccan colleagues at the Ministry of Public Works, the cooperative movement was born of the realization that "the Moroccan was a builder in the soul and that as soon as he was provided with a suitable plot, he would perform miracles in an effort to build his house; the problem is often how to stop him since he always wants to add more stories than the plan allows for."[530] This possibility did not diminish postcolonial administrators' enthusiasm for cooperatives. Instead they doubled down on programs that tasked working-class Moroccans with building the nation while becoming indebted to the state.

Conclusion

Admittedly prefabrication, public-private housing corporations, low-interest loans, work-site management techniques, and cooperatives form a highly heterogeneous list—a mixture of knowledge practices, institutional relations, and financial objects. Yet this chapter has argued that it is precisely in the overlapping space between these crisis technologies that an understanding of the peculiar politics of the late Protectorate period begins to take shape. While some modernizing projects—Écochard's program of housing for the greatest possible number or the Taylorist vision of prefabrication—largely remained fantasies, others came to be built into the architecture of the postcolonial state and the material environment of Moroccan cities. The visions of "flexible" modernization embodied by crisis technologies responded to administrative anxieties about anti-colonial unrest, shrinking budgets, and place of French experts after independence as well as to Moroccan nationalist projects for building the nation. As a result, these crisis technologies spanned the period of decolonization with little resistance—either from Moroccan residents or new postcolonial officials.

[530] De Montmarin, 616.

Focusing on strategies of "flexible planning" (public-private, cooperative, and credit-based) in the 1950s—a decade associated with colonial modernization projects and the advent of a developmentalist postcolonial state—suggests the need to rethink the process of decolonization in Morocco more broadly. With regards to state structure and expertise, the postcolonial transition was not a total rupture. Nor did the postcolonial administration simply adopted *all* Protectorate-era policies and programs under the new rhetorical mantle of nationalism. Rather the major shift lay in the early years of the 1950s when French experts and officials began experimenting with crisis technologies that would transform the role of state, Muslim investors, and experts within the lives of Morocco's urban poor. Cooperatives, public-private housing corporations, and new credit arrangements were ideally suited to weather the process of decolonization because of the ways that they distanced state officials and experts from the messy—and at times violent— realities of slum clearance and reconstruction and because they meshed relatively well with the projects of Moroccan nationalists.

At the same time, following crisis technologies does more than clarify the dynamic interplay of continuity and rupture through the process of formal decolonization. The resemblance between these strategies and those associated with both the periods of "roll-back" (1980s) and "roll-out" (1990s) neoliberalism are striking.[531] In the context of efforts to reduce the colonial state's financial commitment to provide housing for Moroccans, cooperatives and new credit arrangements were designed to create semi-autonomous, entrepreneurial, and permanently indebted subjects. Crisis technologies transformed the destruction of *bidonvilles* (whether through fires or bulldozers) and the devaluation of Moroccan labor into strategies of accumulation for investors in public-private corporations like the CIFM. Histories of

[531] Koenraad Bogaert, *Globalized Authoritarianism: Megaprojects, Slums, and Class Relations in Urban Morocco* (Minneapolis; London: University of Minnesota Press, 2018).

neoliberalism in Morocco have been told as though structural adjustment in 1983 introduced a set of radically new structures and relations—invented by economists at the World Bank and the IMF—that replaced the developmentalism of postcolonial state with its emphasis on modernization and welfare. This chapter suggests that it is possible to look deeper—to consider aspects of recent and present-day neoliberal urban projects in Morocco that constitute a *return* to late-colonial assumptions and techniques. The history of late colonial crisis technologies reveals durable strategies for managing construction that remade relations between elites, experts, officials, and the urban poor—buried lines of connection between the colonial past and neoliberal present.

CHAPTER 4

THE AGADIR EARTHQUAKE

AND THE CRISIS OF POSTCOLONIAL EXPERTISE

An earthquake struck the southern city of Agadir, Morocco, on February 29th, 1960, reaching a magnitude 5.7 on the Richter scale. Between ten and fifteen thousand Moroccans and Europeans lost their lives as a result of shaking that brought down hotels and high-rises in the city center as well as nearly all of the buildings in Agadir's three poorest districts: the Kasbah, Founti, and Yachech. Almost immediately after the earthquake King Mohammed V declared rebuilding the city on roughly the same site a national priority and established a solidarity tax to aid the victims. At the time of the earthquake, Morocco had been independent from France for four years, but conflicts continued at a diplomatic level over the presence of French citizens living in Moroccan cities, of French military bases in Moroccan territory, and of French experts and administrators working within the Moroccan government as technical assistants. The unfolding of disaster in Agadir also presented a paradox for the seismologists and structural engineers of the time: How did an earthquake five thousand times less powerful than the 1906 San Francisco earthquake—with around four hundred causalities—lead to so much death and devastation? Drawing on a history of French colonial science and engineering, the newly independent Moroccan administration seized on the disaster as an opportunity to create new

forms of urban governance.[532] These strategies rested on expert attempts to recast Agadir as a seismically vulnerable space by explaining inordinate levels of death and destruction in terms that both supported and shaped the policies of the post-independence Moroccan authorities. At the same time, experts and officials managing the reconstruction efforts drew upon *crisis technologies* developed during the final years of the Protectorate to deal with urban overcrowding and unrest in Casablanca. Adapting approaches based on the regulation of urban vulnerability and the distribution of debt to the context of seismic disaster, Agadir's experts brought colonial crisis technologies to bear on the project of postcolonial risk management.

This chapter will examine how international teams of experts fashioned a notion of "seismic risk" out of data from seismographs, isoseismal maps, witness accounts, geological studies, and direct observations of destruction following the 1960 earthquake.[533] Rewriting Agadir as a vulnerable space and connecting the city to other sites through a global conceptualization of seismic susceptibility, these experts adjudicated between various interpretations of earthquake causality—sometimes separating, sometimes subtly combining the human, the natural, and the technological.[534] In the process, they obscured the French

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[532] Spencer D. Segalla, "Natural Disaster, Globalization, and Decolonization," in *French Mediterraneans: Transnational and Imperial Histories*, ed. Patricia M. E. Lorcin and Todd Shepard (Lincoln: University of Nebraska Press, 2016), 102; 106-108.

[533] In my analysis of the seismological and engineering studies carried out in post-quake Agadir, I have relied on published materials generated by international technical missions sent to Morocco following the earthquake. To gauge the governmental response to these studies, I have analyzed a series of reports from the Moroccan Ministry of Public Works and the Haut-Commissariat à la Reconstruction (HCRA) on the planning and implementation of the city's rebuilding. To my knowledge these reports are only available at the libraries of the Institut Scientifique and the Ministère de l'Habitat et de la Politique de la Ville in Rabat. While in Agadir on two separate occasions, I attempted to access the city's postcolonial municipal records dealing with the years of the reconstruction under the HCRA. I was not able to gain access to these materials and in one case was made to understand that they most likely no longer exist. As a result, I have focused on the formal process of reconstruction made visible in state reports and have attended to the ways in which these accounts diverge from newspaper sources and French Embassy records from the period.

[534] This conceptual distinction between humans, natural forces, and technologies is found in the work of the actors whom I follow. It is not an analytic division that I maintain. In engineering and seismological accounts, humans, natural forces, and technologies have the status of causal factors that support particular interpretations of a disaster. Experts and bureaucrats in Agadir combined these factors—arguing in favor of particular strategies for governing the city as a seismic space—but did not conflate them. The understanding of seismic risk formulated by Agadir's

Protectorate's long history of urban neglect and assigned responsibility for the devastation of the city's poorest neighborhoods to "natural" forces or ineffective "traditional" building practices.[535] As a technoscientific object, seismic risk masked the role of material inequalities in the distribution of damage and transformed political questions surrounding Agadir's rebuilding into technical ones.[536] This is not to suggest that Agadir's experts simply overlooked an "underlying political economy of risk" or concealed the "social construction of 'natural' disaster."[537] Rather, they played an active role in determining which institutions and professional communities would be held responsible for future seismic security and which forms of knowledge and practice would be excluded from the reconstructed city. The earthquake not only enabled unprecedented levels of direct administrative oversight but also provided an opportunity for recasting the relationship between experts—especially foreign ones—and the postcolonial state in Morocco.

As it cut across scientific, engineering, and bureaucratic domains, *seismic risk* gave rise to projects aimed less at controlling nature than at redistributing vulnerability and authority among experts, administers, and inhabitants. The city's new antiseismic building codes, the

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experts rested on a conceptual separation between humans, natures, and technologies, but this separation was a flexible one—capable of generating multi-causal explanations and complex visions of the social and natural order.

[535] For a discussion of the links between socio-spatial inequalities, disaster-vulnerabilities, and exposure to environmental risks in contemporary Johannesburg see Martin J. Murray, "Fire and Ice: Unnatural Disasters and the Disposable Urban Poor in Post-Apartheid Johannesburg," *International Journal of Urban and Regional Research* 33, no. 1 (2009): 165–92. Murray does not consider, however, how technoscientific practices of calculation and management that enact and attempt to stabilize risk as an object also play a role in reproducing urban inequalities and redistributing vulnerabilities.

[536] By "material inequalities" I mean differences in the amount and quality of material used to construct, for example, a house in Agadir's Kasbah compared to a house in the New City as well as the economic relationships that reinforced these differences. In a different context, Timothy Mitchell has addressed how techno-political strategies designate particular problems as "natural" as a way to mask their political implications. While there are distinct similarities between the work of experts in Agadir and those he examines in Egypt, I also want to emphasize the unique emergence of a distinctly seismic techno-politics in which the human and the nonhuman were sometimes rigorously distinguished, sometimes subtly combined but consistently in ways that extended expert authority and distributed vulnerabilities among urban residents. Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley: University of California Press, 2002). 221-26.

[537] Ted Steinberg, *Acts of God the Unnatural History of Natural Disaster in America* (New York: Oxford University Press, 2000), 46; Mike Davis, *Ecology of Fear: Los Angeles and the Imagination of Disaster* (New York: Metropolitan Books, 1998), 9.

"Normes Agadir 1960," reshaped collective construction practices and created new networks of power linking architects, real estate magnates, builders, and bureaucrats. As part of the city's new master plan, the authorities designated a large area of the former city as too seismically risky for future development. Founded in July 1960, the Haut-Commissariat à la Reconstruction d'Agadir (HCRA) engaged in a massive expropriation of private land in the zones where seismic destruction had been the greatest—drastically simplifying the city's property regime in the process.[538] Blending technical, legal, and political values, building codes laid the groundwork for an unequal geography of risk and exposure in which seismic security in the city center was traded against the increasing vulnerability of the city's poorest residents.[539] Through their multi-causal interpretations of this contradictory Moroccan earthquake, international scientists and engineers set the stage for the politics of reconstruction, a seismic politics in which strategies for managing risk became vehicles of socio-spatial exclusion and unequal exposure to a variety of new hazards.

The reconstruction efforts themselves betrayed a bipolarity between postcolonial performances of modernization and underlying austerity policies. On one end of the spectrum, Moroccan and European modernist architects designed apartment and government buildings in the city center that aimed to aesthetically embody the ethos of risk management through raw concrete forms. On the other, the city's poorest inhabitants received low-interest loan packages,

[538] Direction de l'urbanisme et de l'habitat: Division de contrôle et de gestion, *Rapport sur la suppression du Haut-Commissariat à la Reconstruction d'Agadir,* 1971, BMHPV, 6.

[539] Wiebe Bijker defines vulnerability as "being susceptible to breaking down, being destructed or dying" and as "a property or characteristic of systems, or a society, or a culture." While following the general contours of this definition, I keep the concept interpretatively thin and focus on tracing how particular forms of vulnerability are enacted for particular subjects through practices like expropriation and demolition. Wiebe E. Bijker, "Vulnerability in Technological Cultures" (Keynote lecture, 33rd Diës Natalis of Maastricht University, Maastricht, Netherlands, January 2009), 1-3; See also Wiebe E. Bijker, Jessica Mesman, and Anique Hommels, eds., *Vulnerability in Technological Cultures New Directions in Research and Governance* (Cambridge, Massachusetts: The MIT Press, 2014).

joined construction cooperatives, and employed cinder blocks to rebuild their neighborhoods. The earthquake provided postcolonial planners with an opportunity like no other—a drastically scaled-up version of the 1958 fire in Derb Jdid [Chapter 3]. Risk management also served as an impetus for the expropriation, reorganization, and redistribution of urban property in Agadir. Spencer Segalla has suggested that the city's rebuilding represented the end of a "the Lyautist fetishization of Moroccan tradition" in urban planning and the acceptance of a "culture of postwar urbanism that led the new city's designers to treat Agadir's residents as cultureless, universal inhabitants of a theoretical modern world."[540] In contrast, Aziza Chaouni has shown how Agadir's reconstruction provided members of Group GAMMA (Groupe d'Architectes Modernes Marocains) with a canvas for developing a distinctive style of postcolonial modernism in Morocco.[541] Group GAMMA's projects sought inspiration from local construction practices and modes of inhabitation while at the same time embracing many of the core principles of Écochard's urbanism.[542] Beyond questions of whether Agadir's new architectural forms could be labeled Moroccan or European, however, the reconstruction process involved adapting many of the logics, technologies, and forms of governance associated with the management of colonial urban crisis to postcolonial disaster response.

The techniques of experts who rewrote Agadir as a seismic space have their origins in the development of the modern discipline of seismology. Like early climatology and epidemiology, late nineteenth century seismology underwent a transformation from an anthropogenic science—based on "felt reports" or witness accounts—into a "purified," hard science that conceptually

[540] Segalla argues that Agadir's destruction and reconstruction provide a foil to urban histories of Protectorate-era Morocco that have emphasized the advent of colonial urban planning, the creation of *villes nouvelles,* and the museumification of the *madīna* as the prevailing processes of urban development in Morocco during the colonial period. Segalla, "Natural Disaster, Globalization, and Decolonization," 117.
[541] Aziza Chaouni, "Depoliticizing Group GAMMA: Contesting Modernism in Morocco," in *Third World Modernism: Architecture, Development and Identity*, ed. Duanfang Lu (New York: Routledge, 2010), 57–84.
[542] Chaouni, 79.

separated earthquakes as quantifiable geophysical occurrences from the lived experiences of disasters as socio-environmental phenomena. In Agadir, however, hundreds of miles from the nearest seismograph station, experts turned to observational methods to fill the gaps of unreliable instrumental data and produced multi-causal interpretations of the earthquake that assigned responsibility for destruction to a particular configuration of humans, natural forces, and technologies.[543] In creating maps, models, and structural analyses, Agadir's experts participated in the project of "reflexive modernization" that Ulrich Beck and Anthony Giddens identify as a defining condition of post-industrial societies.[544] The history of earthquake response reveals how risk managers submitted natural disasters to the same practices of prediction and decision-making as the hazards of industrial production.[545] Seismic events reveal the extent to which

[543] Gregory Clancey argues that nineteenth-century seismology emerged alongside other disciplines, such as architecture and engineering that were also in the process of defining their epistemic and professional boundaries. Deborah Coen has suggested that early seismology acted as an intermediary between hard science and lived experience. Drawing primarily on anthropogenic measurements—"felt reports" in which witnesses accounted for the intensity and duration of the shaking—early seismologists portrayed seismic events as multisensory, local, and collective phenomena. The importance of felt reports (now often digitally submitted) and of qualitative scales like the Modified Mercalli-Cancani-Siedberg for seismologists has, however, increased in recent years. Gregory K Clancey, *Earthquake Nation: The Cultural Politics of Japanese Seismicity, 1868-1930* (Berkeley: University of California Press, 2006), 70; Deborah R. Coen, *The Earthquake Observers: Disaster Science from Lisbon to Richter* (Chicago: University of Chicago Press, 2013), 4-36; Conevery Bolton Valenčius, *The Lost History of the New Madrid Earthquakes* (Chicago: University of Chicago Press, 2015), 157-159; In contrast to this history of the discipline's gradual "purification" in Japan, Europe, and the U.S., Fa-ti Fan's study of Chinese seismology in the 1960s and 1970s provides a provocative account of how Maoist mass science enacted a porous and permanently unclosed object rooted in local forms of knowledge. Fan Fa-ti, "Collective Monitoring, Collective Defense': Science, Earthquakes, and Politics in Communist China," *Science in Context* 25, no. 1 (March 2012), 128.

[544] At the same time, however, I follow Jean-Baptiste Fressoz and Fabien Locher's critique of the concept of "reflexive modernization." Fressoz and Locher argue against approaches to reflexivity that emerged out of the sociology of risk—suggesting that "by stressing the recent reflexivity as an intrinsic characteristic of our contemporary societies, such narratives tend to treat ecological concerns as a given and disregard the conflicts that have actually driven them." Fabien Locher and Jean-Baptiste Fressoz, "Modernity's Frail Climate: A Climate History of Environmental Reflexivity," *Critical Inquiry* 38 (Spring 2012), 581; Ulrich Beck, *World Risk Society,* 109; Anthony Giddens, *Modernity and Self-Identity: Self and Society in the Late Modern Age* (Stanford, Calif.: Stanford University Press, 1991); Niklas Luhmann, *Risk: A Sociological Theory* (New York: Aldine de Gruyter, 1993).

[545] As Beck points out, "ultimately it is cultural perception and definition that constitute risk," but the "becoming-real" of risk is linked to its materialization in various sites and practices (Beck 133-136). At the same time, he maintains a firm distinction between risks as the man-made hazards of industrial society and other "human dramas—plagues, famines, and natural disasters" (Beck 50). Acknowledging the hybrid nature of risks that "include and combine politics, ethics, mathematics, mass media, technologies, cultural definitions and perception," he nonetheless emphasizes that they remain "man-made hybrids" (Beck 146).

"tightly coupled" technical systems are also bound together with soil distribution and fault patterns as well as political institutions and policies of infrastructural neglect to form "envirotechnical systems."[546] Within these systems, expert calculations of risk constitute attempts to stabilize particular visions of the relationship between geophysical forces, the technologies designed to resist them, and human lives. New "interactive complexities" between these systems also generated the potential for new forms of harm to emerge.[547] In Agadir, seismic safety measures similarly engendered unexpected forms of vulnerability: a lack of housing, exposure to the byproducts of cement production, and a susceptibility to new forms of personal indebtedness. At the same time, these vulnerabilities resulted less from the complexity of Agadir's post-quake built environment than from the specific ways in which expert strategies for mapping and managing risk intersected with the priorities of postcolonial state officials anxious to consolidate their hold on the country. As Charles Walker and Mark Healey have suggested, earthquakes have historically provided opportunities for state centralization, territorial consolidation, and the weakening of local forms of authority. Since the nineteenth century, teams of seismologists and engineers—international purveyors of what Scott Knowles refers to as "disaster expertise"—have facilitated in this process.[548]

Rather than the result of scientific reflexivity and the emergence of a "risk society," seismic risk is better understood as the heterogeneous *product* of expert and bureaucratic practices that aim to stabilize a particular the relationship between nature, technology, and

[546] For a seismic event to develop into a full-blown natural disaster it must come into contact with what Sarah Pritchard calls an "envirotechnical system," a "dynamic, porous, and inextricable configuration of nature, technology, and politics." The notion of an envirotechnical system also avoids the division that Beck and Perrow draw between natural and human-made catastrophes. Sara B. Pritchard, "An Envirotechnical Disaster," 219; Beck, 50.
[547] Charles Perrow, *Normal Accidents: Living with High-Risk Technologies* (New York: Basic Books, 1984), 52-53.
[548] Charles F. Walker, *Shaky Colonialism,* 12; Mark A. Healey, *The Ruins of the New Argentina,* 5; Scott Knowles, *The Disaster Experts*.

politics.[549] Disasters provide opportunities for reconfiguring this relationship. To explain a disaster in terms of risk is to arrange a complex array of factors in ways that distribute both blame and authority.[550] Approaches to disasters as "socially organized and systematically produced" phenomena have emphasized how "the norms, beliefs, and procedures that [affirm] risk acceptability" can contribute to a "normalization of deviance."[551] The question in Agadir, however, was less how experts defined notions of acceptable risk than how the calculation and mobilization of risk by a variety of actors constituted a strategic rearrangement of space, knowledges, and state-society relations. Risk was a technopolitical object—embedded within wider networks of power and subsequently deployed to reformat those networks.[552] In formulating seismic risk, scientists and engineers in Agadir explained the disaster in terms of a multi-causal configuration of natural forces, technologies, and human agency. Administrators then mobilized this new definition of risk alongside techniques developed during the Protectorate for the management of "crisis." Through their efforts to make sense of the earthquake, these groups of experts and officials promoted a vision of how technical authority and agency ought to be arranged in the postcolonial city. The process of formulating seismic risk became a way of

[549] As Jean-Baptiste Fressoz asserts, the problem with the historical narrative undergirding Beck's notion of the risk society is "not so much its falseness as its lack of specificity." The complex political afterlives of historically situated practices for defining and managing risk cannot be reduced to stagist arguments about epochal shifts toward reflexive modernity. Jean-Baptiste Fressoz, *L'apocalypse Joyeuse: Une Histoire Du Risque Technologique* (Paris: Editions du Seuil, 2012). 12.

[550] The environmental disasters that Kim Fortun associates with late industrialism and its interlocking "natural, technical, political-economic, social, and discursive systems" have parallels in postcolonial Morocco and the physical, legal, and institutional infrastructures it inherited from the French Protectorate. The infrastructural neglect of non-European neighborhoods in Protectorate-era urban policy and a colonial political-economy that encouraged the formation of densely populated and poorly constructed settlements of unskilled workers at the margins of Moroccan cities ultimately contributed to the level of destruction in Agadir's poorest neighborhoods. Kim Fortun, "From Latour to Late Industrialism," *HAU: Journal of Ethnographic Theory* 4, no. 1 (June 23, 2014), 310.

[551] Diane Vaughan, *The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA* (Chicago: University of Chicago Press, 2016), xiv; 67

[552] Seismic risk in Agadir was technopolitical in the sense proposed by Gabrielle Hecht, in that its stabilization and application as a technoscientific object constituted a "strategic practice of designing or using technology to constitute, embody, or enact political goals." Hecht, *The Radiance of France*, 56-57.

preserving a leading role for French and international experts and expertise within a Moroccan polity in the process of negotiating the meanings and limits of decolonization.[553]

Agadir's Experts

The earthquake of February 29, 1960 transformed Agadir into the site of an international humanitarian disaster. French, American, Spanish, Dutch, and Portuguese marines landed in the ruined city only days after the initial shock and joined the rescue effort.[554] Via print and radio, King Mohammed V called for international aid and national solidarity in assisting the victims, and Prince Moulay Hassan (the future Hassan II) reached Agadir the day after the disaster to oversee rescue operations.[555] The King himself arrived in Agadir a week later. Newspapers described how the "staggering cortege" of journalists, ministers, and dignitaries accompanying Mohamed V wound through the empty streets of the quarantined city. As they prepared to enter the most severely damaged neighborhoods, teams of public health workers advanced to spray the royal procession with D.D.T. Finally, the cortege reached the refugee camps on the outskirts of the city. There, Moulay Hassan, briefed his father on the relief effort's progress. Dressed in a

[553] In his recent book, Segalla has elaborated a comprehensive and comparative account of how the politics of disaster response intersected with struggles over the nature and meaning of decolonization in North Africa. Thinking through the varied ways that environmental factors shape political actors, Segalla demonstrates the interconnectedness and lasting impacts of "slow" and "fast" violence in the North African context. Spencer D. Segalla, *Empire and Catastrophe: Decolonization and Environmental Disaster in North Africa and Mediterranean France since 1954* (Lincoln: University of Nebraska Press, 2020).

[554] "L'escadre française fait route sur Agadir," *Le petit marocain,* March 2, 1960, 1; "1.600 marins de l'escadre fouillent les décombres," *Le petit marocain,* March 4, 1960, 1; "Les militaires marocains, français, américains et espagnols coopérent dans l'oeuvre de secours aux sinistrés," *La vigie marocaine*, March 4, 1960, 1; For a discussion of the humanitarian and diplomatic dimensions of the disaster see Spencer D. Segalla, "The 1959 Moroccan Oil Poisoning and US Cold War Disaster Diplomacy," *The Journal of North African Studies* 17, no. 2 (2012): 315–36.

[555] "S.A.R. le Prince Moulay Hassan chargé par Sa Majesté le Roi d'organiser les operations de sauvetage," *Le petit marocain,* March 2, 1960, 3. Direction de l'urbanisme et de l'habitat, *Rapport sur la suppression du Haut-Commissariat à la reconstruction d'Agadir* (Ministère de l'Interieur, 1971), BMHVP, annex 5. The total sum collected through the national solidarity tax mentioned in this 1971 report (460 million dirhams) conflicts with the number (350 million dirhams) cited in Hazel Barret, Howard Fox, and Linda Stanier, "Continuity through Adversity: Recovery from the 1960 Earthquake in Agadir, Morocco," in *Environment and Housing in Third World Cities*, ed. Hamish Main and Stephen Wyn (New York: John Wiley & Sons, 1994), 73.

military uniform, the Prince delivered this report in his characteristically precise and eloquent French, a language in which his father was not entirely fluent.[556] After touring the remains of the "martyred city," the King declared his and the nation's commitment to rebuilding Agadir.[557] The city's "rebirth," however, would depend less on royal volition than on the techno-scientific work of seismologists, engineers, and architects who brought their own professional considerations to bear not only on the task of reconstruction but on the project of decolonization. As part of this influx of foreign doctors, marines, and aid workers, scientific and technical experts arrived on site, not as participants in the rescue work but as "technical assistants."[558] Working with the Moroccan authorities, their explicit goal was to determine the feasibility of rebuilding the city on the same site. For the administration, Agadir's rapid reconstruction was essential for reinforcing the government's authority in the south and asserting its territorial claims to the Western Sahara—still under Spanish control at the time.[559]

A number of the experts sent to study Agadir came as participants in international scientific missions to Morocco. The U.S. mission, for example, included a committee from the American Iron and Steel Institute (AISI) with engineers from leading steel producers and universities in the U.S. A German team, headed by Dr. Lehmann—a geologist, seismologist and former mine director—was comprised of engineers specialized in demolition and town planning. Around the same time, a Portuguese mission landed in Agadir led by Júlio Ferry Borges and composed of members of the Laboratório Nacional de Engenharia Civil in Lisbon. In addition to engineers and geologists, these teams included photographers, draftsmen, chauffeurs, and various

[556] Miller, 162.
[557] "Un hallucinant cortège a parcouru la ville morte," *La vigie marocaine*, March 7, 1960, 1, 3.
[558] "La reconstruction étudiée à Rabat hier soir en conseil des ministres avec l'aide de techniciens," *Le petit marocain,* 5 March 1960, 1.
[559] Segalla discusses how Moroccan elites linked the reconstruction of Agadir with the recovery of the Moroccan nation as a territorial whole. Segalla, "Natural Disaster, Globalization, and Decolonization: the Case of the 1960 Agadir Earthquake," 113-14.

other technical assistants. Their visits to Agadir were official, formalized affairs, carried out in close cooperation with Morocco's Ministry of Public Works and overseen by the Ministry of the Interior. Several teams presented their findings directly to the Crown Prince.[560]

The majority of scientists and engineers involved in post-quake studies, however, were French nationals—*coopérants* who held semi-permanent positions in Morocco's universities and scientific institutions. Robert Ambroggi, the head of the Moroccan Geological Service at the time, had been in Morocco studying hydrology since 1942. Georges Choubert and Anne Faure-Muret of the Service de la Carte Géologique in Rabat contributed studies of the Agadir region following the earthquake. Another long-time resident, Jean Debrach, who headed the Service de Physique du Globe et de Météorologie of the Institut Scientifique Chérifien, was one of the first scientists to analyze Morocco's seismicity in the early 1930s and became an active participant in the post-quake studies. Others such as Jean-Pierre Rothé—the leading seismologist working in Agadir and the Director of the Bureau Central International de Séismologie in Strasbourg—though not residents, had made their careers studying North Africa.

These French experts and their scientific ventures within the newly independent Morocco were part of a shifting relationship between colonial and technical hierarchies negotiated under the rubric of *coopération*.[561] Since its founding in 1912, the French Protectorate in Morocco had long claimed the mantle of "technical assistance" as a key justification for its project of

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[560] American Iron and Steel Institute, *The Agadir, Morocco, Earthquake, February 29, 1960* (New York: Committee of Structural Steel Producers of American Iron and Steel Institute, 1962), 8; Lehmann et al, "The Reconstruction of Agadir," U.S. Operations Mission to Morocco, 1960, 2; Júlio Ferry Borges, "Estudo do comportamento das construções quando do sismo de Agadir" (Lisbon: Laboratório nacional de engenharia civil, 1960), 1; "Agadir: première audition des experts," *Le petit marocain*, March 19, 1960, 1; The Moroccan government also brought two Japanese seismologists to study the city's destruction and provide recommendations for the reconstruction. Jean Daridan, "Mission de deux sismologues japonais au Maroc," April 7, 1960. Box 365, 15P0/1, Archives Postal Agadir, CADN.

[561] Robert Ambroggi, "Underground Reservoirs to Control the Water Cyclea," *Ground Water* 16 (1978): 158–66; Jean Debrach, "Les tremblements de terre au Maroc en 1933," *Mémoires de la société des sciences naturelles du Maroc* 41 (1935): 56-59.

"paternalism, progress, cooperation, [and] mutual accommodation.[562]" After the dissolution of the Protectorate in 1956, large numbers of French administrators, engineers, scientists, and advisors stayed on in Morocco as technical assistants or *coopérants.* As the new mantra of a rapidly decolonizing French empire, *coopération* allowed former colonial agents to retain their positions in postcolonial administrations across the African continent.[563] While the financial and cultural aspects of the policy remained a source of controversy between the two countries, a 1958 convention established the essential framework for technical and administrative *coopération* between France and Morocco.[564] The work of foreign experts in Agadir lay on the cusp of a transition in which scientific practices and epistemologies deployed by the colonial state to render Morocco legible became strategies of postcolonial rule.[565]

In Agadir, seismology and structural engineering were the vehicles for this transition. Given their close ties with the Moroccan administration, French experts unsurprisingly produced studies that paralleled the priorities of the postcolonial authorities. Only days after the earthquake, Prince Moulay Hassan declared the goal of rebuilding the city *on the same site* a national necessity.[566] Maintaining a strong economic presence in the south required

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[562] Rabinow, *French Modern,* 277.

[563] For a consideration of how cooperation allowed France to move away from a "logic of empire" without abandoning a "logic of modernization" during the decolonization process see Frederick Cooper, *Colonialism in Question: Theory, Knowledge, History* (Berkeley: University of California Press, 2005), 147; Guillaume Lachenal, "The Intimate Rules of the French Coopération: Morality, Race and the Postcolonial Division of Scientific Work at the Pasteur Institute of Cameroon," in *Evidence, Ethos and Experiment: The Anthropology and History of Medical Research in Africa*, ed. Wenzel Geissler and Catherine Molyneux (New York: Berghahn Books, 2011), 373. Philip Naylor has also charted the decolonization process in Algeria through the lens of *coopération*. Phillip Naylor, *France and Algeria: A History of Decolonization and Transformation* (Gainesville, Fla.: University Press of Florida, 2000), 252-254.

[564] "Convention judiciaire entre le Maroc et la France," *Bulletin officiel* 2359 (January 10, 1958).

[565] Segalla has noted how tensions in the city ran high between French and Moroccan aid workers and survivors following the earthquake. It is unclear whether similar tensions existed between French and Moroccan experts, though engineers who worked in Agadir, such as Mustapha Faris and Jacque Boudillon, have described their collaboration in harmonious terms. Segalla, "Natural Disaster, Globalization, and Decolonization," 111; Mustapha Faris, "Témoignage sur l'exemplarité des relations entre anciens élèves français et marocains," *La revue PCM* (February 1997) 56; Jacques Boudillon and Mustapha Faris, "Les ingénieurs des ponts au Maroc la promo 59, l'enthousiasme et l'amitié des années 60, l'héritage d'André Boulloche," *La revue PCM* (January 2004), 21.

[566] "S.A.R. le Prince héritier: une Agadir reconstruite sera inaugurée le 2 mars 1961," *Le petit marocain*, March 3,

reconstructing Agadir, the capital of the Sous region. In a widely publicized speech, the first High Commissioner of the HCRA, Mohammed Imani, cited the importance of "seismological and geological expertise" in guiding the state's reconstruction policy.[567] The work of foreign experts to rewrite the city as a seismically vulnerable space scientifically sanctioned the reconstruction project and provided the administration with new techniques for managing urban building and dwelling.[568]

The international teams sent to study the Agadir earthquake drew on techniques of seismic analysis that were common to their disciplines at the time. Along with the less deadly but more powerful earthquake in Orléansville, Algeria in 1954—to which experts drew frequent comparisons—Agadir fit into an emerging understanding of North Africa as a seismically vulnerable region.[569] Broadly, expert studies of the earthquake argued that seismic risk must be taken into account in regional and urban planning. Agadir's surprising number of fatalities served as a reminder of the dangers of low-quality constructions in unplanned and unregulated urban environments—an increasingly common refrain among earthquake engineers across the world.[570] Like the 1970 earthquake in Gediz, Turkey, Agadir's destruction and reconstruction became synonymous with the failure of traditional construction methods and their subsequent reform through modernizing state action. Earthquakes such as Gediz came to signify not only the unpredictability of seismic events, but also the fundamentally different character of natural

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1960.

[567] "La conference de presse de M. Mohamed Imani," *La vigie marocaine*, February 4, 1962, 2.

[568] Reports by the HCRA frequently reference the importance of scientific and technical studies in the formulation of their plans for the reconstruction. al-Mand-ūbiyya al-sāmiyya li-l-ʿādat al-binā', "Agadir 1383," 1963, BMHPV, 1; Haut-Commissariat à la Reconstruction, "Agadir: Information urbanisme aide de l'état", 1963, BMHPV, 2.

[569] Georges Dubourdieu, "La leçon du séisme d'Agadir," *Comptes rendus des séances de l'Académie des science* 256 (January 14, 1963), 725. In 1960, the Theory of Plate Tectonics was only gradually coming to be accepted within seismology and did not play a major role in the explanations that Agadir's experts published shortly after the earthquake.

[570] Organizing Committee Second World Conference on Earthquake Engineering, *Earthquake Resistant Regulations of the World* (Tokyo: Gakujutsu Bunken Fukyu-kai, 1960).

hazards in "developing societies" and the lessons to be learned by their central governments during reconstruction.[571] What made Agadir distinct from Orléansville or Gediz was the conjuncture of disaster and decolonization.[572] Local forms of skill and knowledge, such as masonry, and local categories of property left largely untouched under the French Protectorate in Morocco suddenly became critical sites of intervention for the sweeping modernization projects of the newly independent administration. While Protectorate-era planners indulged in dreams of creating rationalized and regulated cities, it took the destructive force of the earthquake, the threat of "economic asphyxia" in the region, and the postcolonial government's decision to seek technical assistance to transform these high modernist fantasies into a reconstruction project.[573]

Risky Visions of Reconstruction

For Agadir's experts, investigating Morocco's seismicity meant providing precise explanations not only for the disaster of 1960 but also for past and future catastrophes, as well as adjudicating between the natural and man-made causes of destruction. Assigning causal weight to one factor or another involved alternating between different spatial and temporal scales. Seismologists and geologists described the earthquake as a phenomenon with local, regional, and global relevance—shifting scales of analysis and explanation in an effort to draw the appropriate lessons from the disaster. Discussing the earthquake as a kind of natural experiment, they transformed destruction into useful data that could be reapplied to the new city or made relevant

[571] William Mitchell, "Reconstruction After Disaster: The Gediz Earthquake of 1970," *Geographical Review* 66, no. 3 (1976), 303.
[572] Segalla has elaborated on how "the earthquake made [Agadir's] built environment central to transnational struggles over the Cold War, decolonization, and culture." Segalla, "Natural Disaster, Globalization, and Decolonization," 102.
[573] Rabinow, *French Modern,* 3; Ministère des travaux publics, *Agadir plan directeur*, Rabat: 1960, BMHPV, 43; "La reconstruction étudiée à Rabat hier soir en conseil des ministres avec l'aide de techniciens," *Le petit marocain,* March 5, 1960, 1.

to other seismically vulnerable settings.[574]

Experts conducted their studies in an atmosphere of emergency. Only days after the earthquake, Mohammed V ordered a total evacuation of city.[575] Citing the dangers of an epidemic, the authorities quarantined the site and ushered survivors into emergency tent cities on the periphery.[576] Demolition work to prepare the terrain for field studies and eventual rebuilding began almost immediately—even before rescue efforts had officially ended.[577] The 79th Engineer Battalion of U.S. Army arrived on March 3 with bulldozers and other heavy equipment—accelerating the work of clearing debris.[578] During the early days of reconstruction, military authorization was required to enter the city, and the authorities granted almost exclusive access to groups of foreign scientists, engineers, and architects. For experts studying the region's geological structure or proposing building regulations, the partially destroyed, partially demolished site functioned as a kind of crime scene—an unruly space that could be mastered and made to speak through forensic techniques.

Robert Ambroggi was one of the first scientists to arrive on site and carry out a geological and seismological analysis in coordination with engineers from the Ministry of Public Works. In his account as in those that followed by Rothé, Debrach, Choubert and Faure-Muret, the goal was less to determine the ultimate causes of the earthquake than to establish the stratigraphic and tectonic context in which it occurred. These authors linked distinct geological features of the local site, the region, or both to the unfolding of seismic destruction in Agadir. Ambroggi

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[574] Jean-Pierre Rothé, "Le séisme d'Agadir et la séismicité du Maroc" in *Notes et mémoires du Service géologique,* (Rabat: Éditions du Service géologique du Maroc, 1962), 18; F.F. Evison, "Lessons from Agadir," *New Zealand Engineering* 18, no. 10 (1963), 371.
[575] "Agadir: evacuation totale aujourd'hui," *Le petit marocain*, March 3, 1960, 1.
[576] Phyllis M. Swanson, "The Earthquake of Agadir, Morocco," (Master's Thesis, University of Minnesota, 1963) 19.
[577] "Pas de grands moyens tant qu'il y aura une chance de retrouver un être vivant," *Le petit marocain*, March 6, 1960, 3.
[578] American Iron and Steel Institute, 14.

assigned particular importance to the local tectonics of the former city site, suggesting that the Tildi and Lahouar faults acted like a dam to contain the force of seismic waves emanating from the epicenter. For Debrach, analyzing the geological structure of the region as a whole, rather than studying local fault patterns provided a more accurate picture of the Agadir earthquake's origin. He was quick to note, however, that while a regional investigation could help explain the intensity of the earthquake's effects, it revealed little about its causes. Rothé also avoided interpreting the earthquake purely in terms of the local or regional geological structure. Instead he emphasized the need to deepen the historical understanding of the nation's seismicity.[579]

Instruments played a defining role in rendering Morocco's seismicity legible according to the conventions of modern seismology. Seismographs and their increasing technical complexity during this period had allowed the discipline to become less reliant on direct observations and witness accounts. Prior to 1937, there were no seismograph stations in Morocco and "most of the seismic activity [was] too weak to be recorded outside the country."[580] The founding of the Averroes seismic observatory near Casablanca represented the first attempt to transform Morocco's earthquakes into instrumentally visible phenomena. In Agadir, post-quake investigations into the region's historical seismicity maintained a firm division between instrumentally and human-observed seismic events. Rothé's report distinguished between earthquakes known from historical sources alone—including lists of earthquakes compiled from Arabic manuscripts dating as far back as the thirteenth century—and those detected by seismographs, even when seismographic data proved too sparse to accurately locate the

[579] Robert Ambroggi, *Séisme d'Agadir (29 février 1960 à 23h41): Rapport géologique* (Rabat: Ministère de l'économie nationale, Direction des mines et de la géologie, 1960), 20; Jean Debrach, "Rapport préliminaire du Service de Physique du Globe et de Météorologie sur le tremblement de terre du 29 février 1960 à Agadir," in *Notes et mémoires du Service géologique* (Rabat: Éditions du Service géologique du Maroc, 1962), 31–41. 33; Rothé, 23. For a historical study of Moroccan earthquakes see Thuryyā al-Murābiṭ, Al-zalāzil al-kubrā bi-al-minṭaqah al-maghāribīyah wa-mukhallafātuhā ʻalá al-insān wa-muḥīṭih (Rabat: Azruwāl, 2005).
[580] American Iron and Steel Institute, 23.

epicenters.[581] When mapping the seismicity of Morocco and neighboring regions, Rothé included only earthquakes that occurred after 1910, or roughly the date that European seismographs became capable of detecting seismic events in Moroccan territory.[582] While instrumentally visible, the precise epicenters of these earthquakes, especially those before the late 1930s, remained "doubtful"—a fact that did not prevent Rothé and Debrach from including them when determining the level of seismic risk in large swaths of the country.[583] While seismographs in Europe or the Casablanca region could make Agadir's earthquake instrumentally visible, their distance from the site meant that their measurements were insufficient for calculating the location of the epicenter.[584] As a result, experts relied more heavily on direct observation and witness accounts to construct a basic, geophysical description of the earthquake.

As opposed to the *magnitude* of the earthquake—an instrumentally-generated value on the Richter scale obtained by correlating readings at different seismograph stations—the term *intensity* signifies the relative, felt impact of the shaking. While theoretically separate from the description of the earthquake as a discrete geophysical occurrence, intensity entered into seismologists' attempts to locate the epicenter in the absence of reliable seismographic data. To measure intensity, experts deployed hybrid definitions of destruction, creating equivalencies between physical changes in the terrain, structural damage, and human fatalities. Once formulated, calculations of the 1960 earthquake's intensity laid the groundwork for the category of seismic risk.

As the AISI team acknowledged, studies of the region's tectonics had only limited value

[581] Rothé, 20-28; G. Roux, "Note sur les tremblements de terre ressentis au Maroc avant 1933," *Mémoires de la société des sciences naturelles du Maroc* 34 (1934): 42–71. 42-71.
[582] Rothé, 20.
[583] Rothé, 27-28.
[584] Rothé, 14.

for predicting the scope, scale, and location of future earthquakes in Agadir given that "the entire coastal region near the end of the Atlas Mountain Range must be considered seismically active.[585]" Geological structure alone offered an understanding of seismic vulnerability on a regional scale that was ill-suited to legitimizing reconstruction on the former city site or providing guidelines for rebuilding. In an effort to extract useful data from the rubble, teams of experts analyzed the distribution of seismic damage, producing isoseismal maps, hundreds of photographs, and countless structural analyses. The overarching goal of these studies was to create a local geography of seismic risk, one in which the most vulnerable sectors of the former city could be identified, sequestered, and subjected to the necessary constraints during rebuilding. Detailed descriptions of seismic damage transformed the political necessity of Agadir's rapid reconstruction on roughly the same site into a viable, scientifically sanctioned project.

A local geography of seismic risk emerged from isoseismal maps of the earthquake drawn by Rothé, Debrach, and Ambroggi. Based on the Modified Mercalli-Cancani-Siedberg (MCS) Scale, with values ranging from I to XII, their maps indicated the relative intensities and the distribution of damage resulting from the shaking. The categories of MCS scale blended human, technological, and environmental reactions to calculate intensity. The criteria for a ranking of IX, for example, included descriptions such as "General Panic….General damage to foundations. Frame structures, if not bolted, shifted off foundations….Conspicuous cracks in the ground. In alleviated areas sand and mud ejected, earthquake fountains, sand craters." Normally, seismologists expected the highest intensity zone to be located directly around the epicenter and the degree of damage to decrease in more or less regular patterns that could be mapped with

[585] American Iron and Steel Institute, 82-83.

isoseismal lines. Applying this method in Agadir, however, proved difficult. Drastic differences in construction quality led to widely varying levels of destruction in areas equidistant from the presumed epicenter.[586] Many calculations even placed the epicenter in zone IX, rather than in zone X where the shaking leveled the city's poorest neighborhoods. This contradiction suggested the extent to which material disparities—differences in the quality and amount of material used to construct the city's poorer and wealthier, Moroccan and European neighborhoods—had led to a highly unequal distribution of seismic damage.[587]

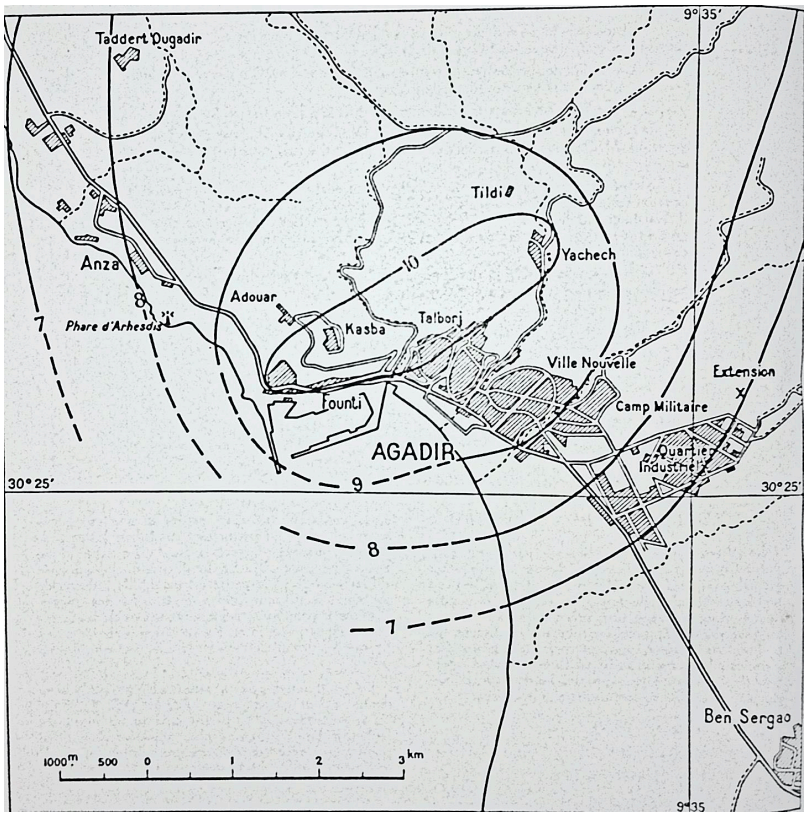


Figure 14: "Agadir Earthquake: Epicentral Zone" in Jean-Pierre Rothé, "Le séisme d'Agadir et la séismicité du Maroc" in *Notes et mémoires du Service géologique* (Rabat: Éditions du Service géologique du Maroc, 1962).

[586] Rothé, 10.
[587] Jean Duvergé, *Le séisme d'Agadir et la protection paraséismique*, (Casablanca: Service de la météorologie nationale, 1969), 32.

To create his isoseismal map, Debrach made extensive use of witness accounts—traveling from village to village to interview residents. He was quick to undercut his witnesses, however, noting that the "low density of inhabited centers where inquiries could be carried out" and "the obvious influence of newspaper articles on many of the responses" diminished the reliability of their accounts.[588] In contrast, Rothé drew mainly on his own examinations of collapsed structures in the city to determine the distribution of intensity. Constructing a "view from above," he also carried out an aerial observation, a technique that elicited criticism from Choubert and Faure-Muret.[589] Citing the difficulty of assessing seismic damage from the air, Choubert and Faure-Muret adopted an alternative method—redefining destruction and measuring the impact of the earthquake not in terms of collapsed buildings but by the number of human fatalities in surrounding villages. Reproduced in Rothé's report, this list of causalities by village performed the same function as charts showing percentages of collapsed buildings by neighborhood. Lists and charts rendered different forms of destruction commensurable and quantifiable for experts and administrators, paving the way for the construction of seismic risk.

[588] Debrach, 32.
[589] Georges Choubert and Anne Faure-Muret, "Le séisme d'Agadir, ses effets et son interprétation géologique," in *Notes et mémoires du Service géologique* (Rabat: Éditions du Service géologique du Maroc, 1962), 64; For a study of aerial photography and its role in shaping diverse expert knowledges see Jeanne Haffner, *The View from Above: The Science of Social Space* (Cambridge, Mass.: The MIT Press, 2003).

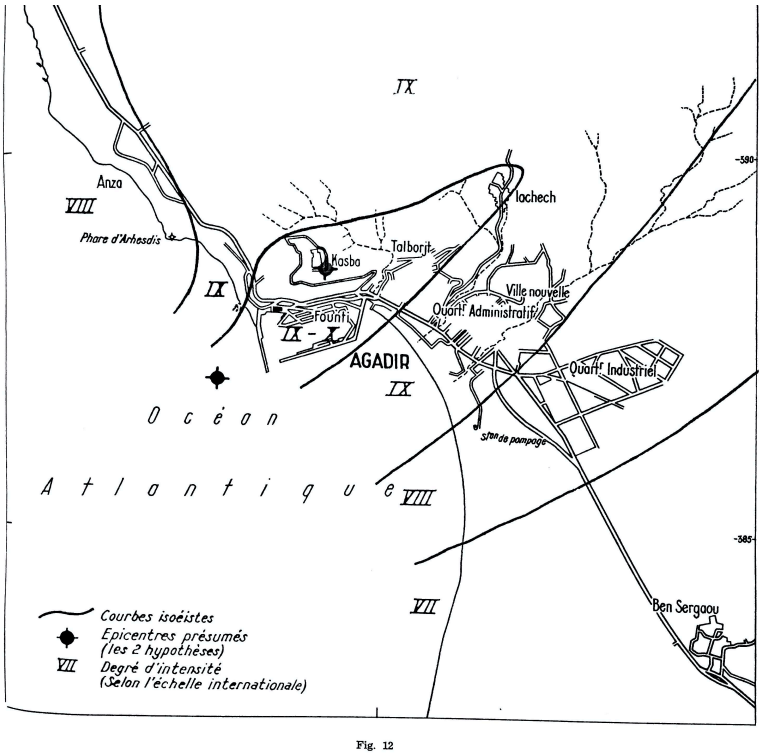


Figure 15: "Isoseismal Map of Agadir and its Extra-urban Zone" in Robert Ambroggi, *Séisme d'Agadir (29 février 1960 à 23h41): Rapport géologique*. Royaume du Maroc, Ministère de l'économie nationale, Direction des mines et de la géologie, 1960.

Ambroggi adopted similar methods to create his isoseismal map—conducting an eight-day field survey of Agadir's fractured landscape. The position of his isoseismsal lines resembled Rothé's despite their disagreement over the maximum level of intensity attained during the quake. Ambroggi's main innovation was to utilize this isoseismic data to estimate varying levels of "danger" across the former site of the city. In his report, this transition from intensity and risk—from past to future—was seamless. Dividing the site into four zones of decreasing danger (A-D), Ambroggi mapped a vision of seismic susceptibility that approximately paralleled the contours and divisions of his isoseismal map. He identified, for example, an area "not recommended for rebuilding" that clearly corresponded to the zone of intensity IX-X[590]. Other

[590] Ambroggi, *Séisme d'Agadir*, 25.

experts would later support this proposal, suggesting that the entire area north of the Oued Tildi be transformed into a green zone.[591] The HCRA would ultimately adopt Rothé's map and Ambroggi's recommendations.[592] Their city-scale visions of destruction supported the postcolonial administration's aim to rebuild Agadir in approximately the same location. Despite their acknowledgement that the local tectonics of the site provided little reliable indication of where exactly a future earthquake would occur, it was the local tectonic vision underlying Rothé and Ambroggi's city-scale maps that would influence reconstruction policy.[593]

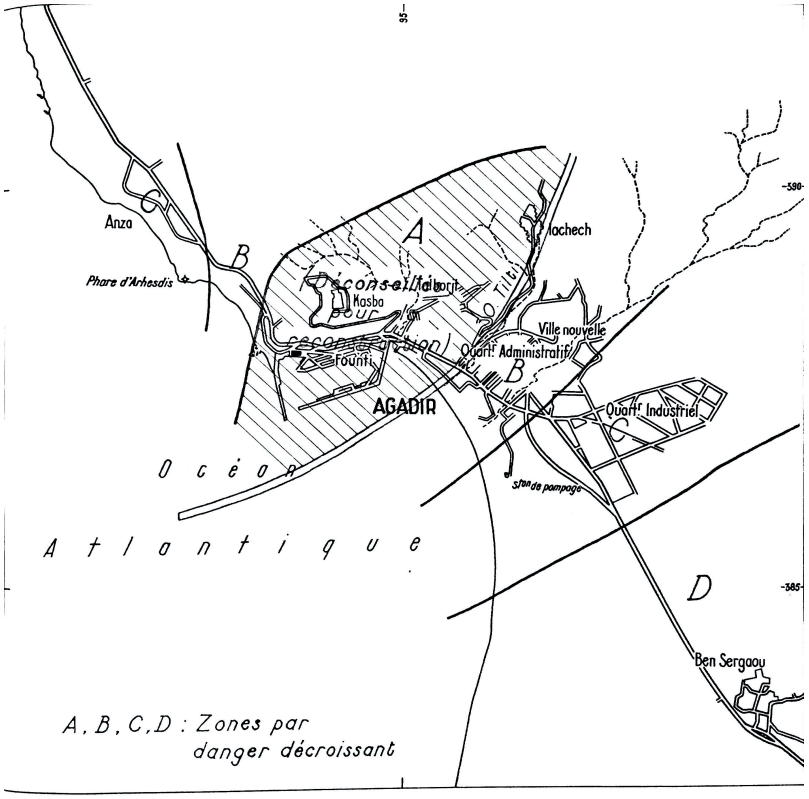


Fig. 13

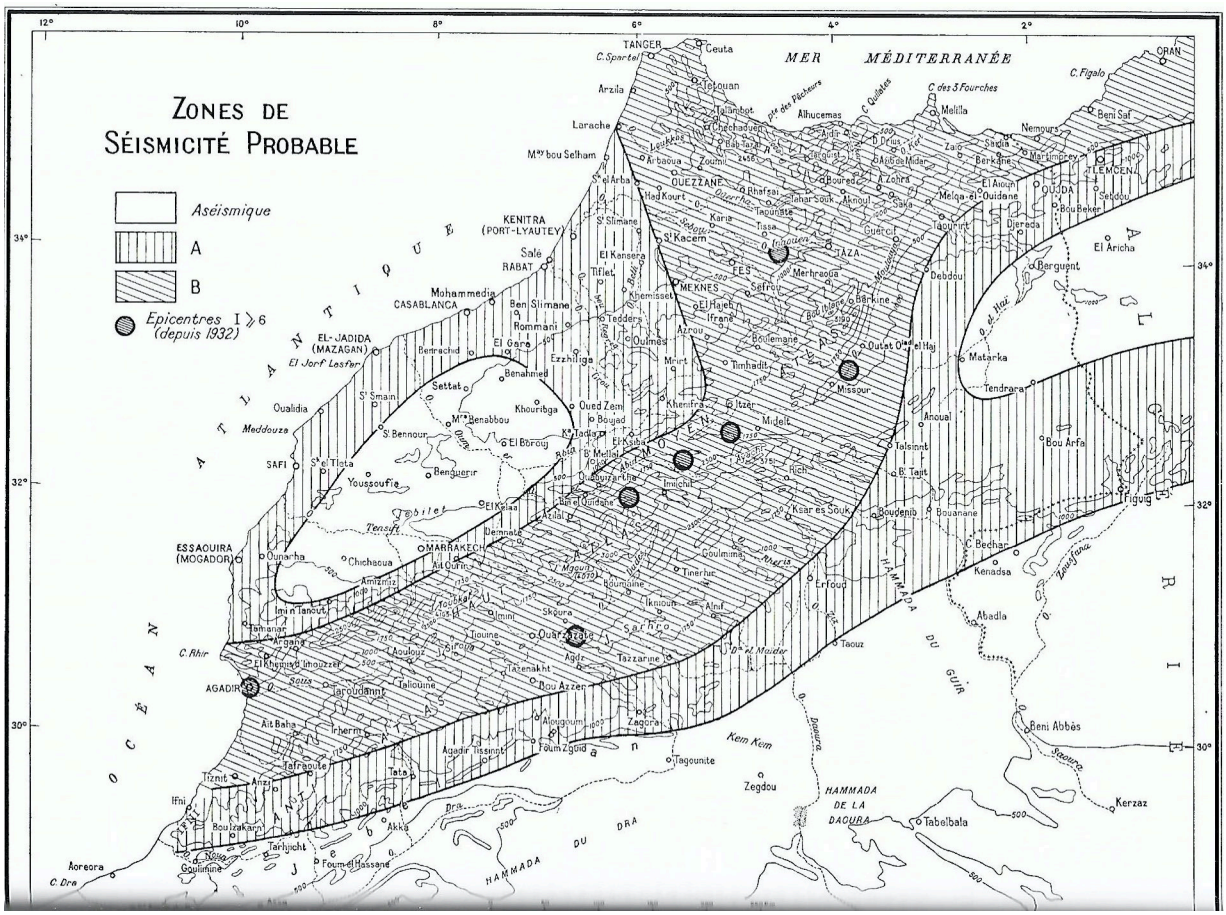
Carte de répartition des zones d'Agadir par danger décroissant

Figure 16: "Map of the Distribution of Agadir's Zones by Decreasing Danger" in Robert Ambroggi, Séisme d'Agadir (29 février 1960 à 23h41): Rapport géologique. Royaume du Maroc, Ministère de l'économie nationale, Direction des mines et de la géologie, 1960.

[591] Rothé, 19.
[592] Haut-Commissariat à la reconstruction d'Agadir, "Agadir," BMHPV.
[593] Communications between the French Embassy in Morocco and the Ministry of Foreign Affairs reference Rothé's influence on the reconstruction policy eventually adopted by the Moroccan government. L'Ambassadeur de France au Maroc, "Reconstruction d'Agadir," 19 May 1961. Box 365, 15P0/1, Archives Postal Agadir, CADN.

The local vision of seismic risk, graphically rendered in Ambroggi's map, was reinforced and expanded in a regional map from the same period. Working together, Rothé and Debrach charted the "Zones of Probable Seismicity" for Morocco and parts of Western Algeria.[594] Though not the first reflection on Morocco's historical seismicity, their map was the first to combine a vision of the nation's seismic past with predictions about its seismic future—carving up geographic space through a territorialization of risk. Partitioning Moroccan territory according to three categories of earthquake susceptibility supported a radically simplified representation of risk that removed the multi-causal complexity of seismic events from view. Rothé and Debrach's risk map, like Ambroggi's, provided a visual framework for the extension of expert oversight and bureaucratic management in the most vulnerable areas (Zone B). At the same time, the map linked Morocco to other "earthquake nations," strengthening a global vision of seismic risk and scientific mastery.[595]

[594] Debrach, 40.
[595] Clancey, 4.


ZONES DE
SÉISMICITÉ PROBABLE
Aséismique
A
B
Epicentres I ⩾ 6
(depuis 1932)
MER MÉDITERRANÉE
OCÉAN ATLANTIQUE
ALGÉRIE
TANGER
Ceuta
Tetouan
Melilla
ORAN
Nemours
Oujda
Berguent
Figuig
Bou Arfa
Beni Abbès
Kerzaz
Tabelbala
Zegdou
Tagounite
Foum Zguid
Agadir Issmmt
AGADIR
Taroudannt
Tiznit
Goulimine
Aoreora
Tarhjicht
Akka
Tata
Tafraoute
Bou Izakarn
Ifni
Arzila
Larache
KENITRA
(PORT-LYAUTEY)
RABAT
Salé
CASABLANCA
Mohammedia
EL-JADIDA
(MAZAGAN)
El Jorf Lasfer
Safi
Youssoufia
ESSAOUIRA
(MOGADOR)
MARRAKECH
Chichaoua
Ounarha
Amizmiz
Imin Tanout
Tahanaout
Argana
Ait Baha
Irherm
Tiouine
Taliouine
Taroudannt
Sous
Oued Sous
Oued Massa
Oued Noun
Oued Draa
Oued Ziz
Oued Guir
Oued Saoura
Oued Zousfana
Oued Ghir
Oued Beht
Oued Sebou
Oued Inaouen
Oued Ouerrha
Oued Sebaa
Oued Beth
Oued Bouregreg
Oued Tensift
Oued Meddouza
Oued Oum er Rbia
Oued Tessaout
Oued Ahansal
Oued Todgha
Oued Dades
Oued Ziz
Oued Rheris
Oued Guir
Oued Saoura
Oued Zousfana
Oued Bechar
Oued Kenadsa
Oued Abadla
Oued Taouz
Oued Erfoud

Re-engineering Local Building Practices

While seismological studies created local and regional geographies of natural risk, engineers produced a vision of risk that strove to isolate the technological—locating vulnerability in particular construction methods and materials. If seismologists *territorialized* risk, then engineers *materialized* it. Isoseismal maps graphically linked high death tolls with proximity to the epicenter, and structural analyses attributed excessive fatalities to local building practices. Engineers condemned "traditional" construction methods as the root cause of inordinate levels of death and destruction. Assigning responsibility for human and monetary losses to building practices, however, obscured the role of material inequalities between European and Moroccan neighborhoods of the formerly colonial city in shaping the distribution of fatalities. The sequestered site also provided engineers with an ideal experimental space to elaborate their own definitions of risky methods and materials—definitions that allocated blame and reconfigured authority during reconstruction.

According to the AISI report, "an earthquake in a populated area may be considered as a mammoth structural test program in which the performance of various types of construction and of different forms of structural details may be compared." [598] Reports linked structural analyses of the city's destruction to the development of antiseismic construction techniques internationally. Connected by a global geography of seismic risk, Agadir served as a laboratory for professionals from Portugal to New Zealand.[599] To make destruction meaningful for fellow practitioners, engineers proposed a variety of classificatory systems for categorizing types of

during Hassan II's early rule. Reports recognizing the monarchy's participation also invoked the multiple scientific studies that had been carried out to ensure the safety and security of the rebuilt city. Such reports portrayed the reconstruction effort as a triumph of scientific progress and bureaucratic efficiency. Wizārat al-anbā', "Agādīr ba'da al-zilzāl" (Rabat, not dated, c. 1966), 10; 17-19.

[598] American Iron and Steel Institute, 32.

[599] Borges, 19; F.F. Evison, "Lessons from Agadir," 370.

constructions in Agadir according to their seismic vulnerability. Despeyroux, for example, divided buildings into three types: "1. traditional houses or those of poor quality masonry, 2. small, urban-looking constructions built with little attention to technical concerns, 3. modern European constructions."[600] The German team's report labeled structures in the Kasbah, Founti, and Yachech simply as "primitive buildings."[601] The Kasbah became the standard example of "poor quality masonry" with other "poor Moroccan suburbs" ranked in relation to Agadir's oldest neighborhood.[602] Other classificatory systems, such as the one included in the MCS scale, focused on the quality of masonry and designated materials such as adobe as inherently vulnerable to seismic destruction.

Surveying the landscape of collapsed and crumbling structures, one engineer described local building practices as a kind of "seismic pathology," which the experimental qualities of the earthquake rendered visible to the expert eye.[603] This "pathology" demanded a particular treatment: the total reorganization of space and building practice in Agadir. While enumerating the symptoms of structural failure, engineers assigned blame to local methods and materials. The Portuguese Mission, for example, described how "in neighborhoods at a lower economic level, they sometimes employed a mortar of clay mixed with sand"—a technique identified as the cause of widespread destruction in the city's poorest areas.[604] The AISI report adopted similar language, suggesting that "the stone masonry structures in the Kasbah, Founti, and Yachech districts *were responsible* for a large share of the deaths and injuries which resulted from the earthquake."[605] By diagnosing local building practices as the source of seismic destruction,

[600] J. Despeyroux, "The Agadir Earthquake of February 29th 1960," 522.
[601] Lehmann, 2.
[602] American Iron and Steel Institute, 12.
[603] F. Vialet, *Séisme du 29 février 1960 à Agadir résistance séismique des constructions*, 1960, BISR, 15.
[604] Borges, 4-8.
[605] American Iron and Steel Institute, 33. Emphasis added.

engineers labeled them as targets of administrative intervention.

Figure 18: "View of the Talborjt Neighborhood" from the photographic section of Júlio Ferry Borges, *Estudo do comportamento das construções quando do sismo de Agadir,* (Lisbon: Laboratóratorio nacional de engenharia civil, 1960).

Beyond generalizations about the role of unsophisticated techniques or poor quality materials in generating most of earthquake's causalities, engineers devoted little attention to analyzing the "seismic pathology" that plagued Agadir's "traditional" neighborhoods.[606] In engineering reports as a whole, the vast majority of studies dealt with the structural flaws of reinforced concrete buildings in the Administrative Quarter or the New City. It is possible that experts regarded the failure of concrete structures as an anomaly that had to be explained,

[606] Vialet, *Séisme du 29 février 1960 à Agadir résistance séismique des constructions*, 1960, BISR, 10-15.

whereas the devastation of low-cost housing in the Kasbah, Yachech, Founti, and Talborjt appeared inevitable. While minor damage to hotels or administrative buildings led to complex calculations of force and resistance, the total collapse of houses in Talborjt elicited observations such as "the stones simply fell apart."[607] For engineers, the behavior of "mediocre constructions…teaches nothing unknown" and thus possessed little value as data that could be applied elsewhere.[608] As a result, the disaster inspired only minimal reflection on the possibilities of low-cost, antiseismic housing, a fact that would contribute to the unequal redistribution of risk in the reconstructed city.

Figure 19: "Rupture of the Frame in a Store Near the Port" from the photographic section of Júlio Ferry Borges, *Estudo do comportamento das construções quando do sismo de Agadir,* (Lisbon: Laboratóratorio nacional de engenharia civil, 1960).

[607] American Iron and Steel Institute, 34.
[608] Despeyroux, 526.

Photographs reinforced the distinction between inevitable technological failure in resource-poor areas and the unexpectedly mediocre performance of certain European-style buildings. Post-quake images of "traditional" neighborhoods depicted vast, unvariegated landscapes of collapsed or crumbling edifices, while photographs of the New City, the Industrial Quarter, and the Port tended to isolate components of a specific building, rendering certain structural flaws visible. Differences in the visual scale and content of images of disaster naturalized the destruction of "traditional" buildings and individualized the destruction of "modern" ones. One photograph of the Yachech district portrays a shapeless mass of rubble that blends almost indistinguishably with the surrounding countryside. Aerial photographs in particular suggested the total, undifferentiated, and anonymous nature of destruction in the poorest neighborhoods. Between narrow visions of technological failure and images of wide-spread collapse, photographic evidence performed a diagnostic function. Whether revealing a technical mistake in the execution of a reinforced concrete structure or exposing the "pathological" construction practices of entire neighborhoods, photographs framed an expert critique of ways of building and being in Agadir.

Figure 20: "Typical Street Scene, Yachech District" from American Iron and Steel Institute, *The Agadir, Morocco, Earthquake, February 29, 1960* (New York: Committee of Structural Steel Producers of American Iron and Steel Institute, 1962).

Drawing on the work of structural engineers and planners, the Ministry of Public Works also circulated maps classifying different levels of structural damage. By dividing buildings into two categories, reparable and non-reparable, such maps offered a simplified framework for action, one which guided the demolition and reconstruction process and would have a major impact on how administrators reorganized the urban land tenure system.[609] These maps also revealed how the distribution of damage inversely corresponded to the distribution of resources in colonial-era Agadir. Red figures designated Yachech, Founti, and the Kasbah as beyond repair, while black squares demarcated the New City as a space for rebuilding and development. The

[609] Pierre Mas, "Plan directeur et plans d'aménagement," *A+U Revue africaine d'architecture et d'urbanisme* 4 (1966), 8; The archives of the French Foreign Ministry also contain multiple examples of maps produced by the Moroccan Ministry of Public Works that divided the city's buildings into categories based on the level of structural damage they sustained. The administration used these maps to determine which areas to demolish, which to repair, whom to expropriate, whom to indemnify. Box 365, 15P0/1, Archives Postal Agadir, CADN.

overall message was clear: traditional designs, materials, and methods would have no place in a reconstructed Agadir. Reinforced concrete, despite a few catastrophic collapses, constituted the only conceivable path to a modern urban future in which the risk of structural failure could be calculated and controlled.[610]

Figure 21: "Quartier central de Talborj [sic]", Photographie, Service de l'urbanisme au Maroc, March 1960 in *Notes et mémoires du Service géologique*. Rabat: Édition du Service géologique du Maroc, 1962.

To secure this future, the mostly foreign experts in Agadir elaborated the first antiseismic construction codes in Morocco. Without exception, engineers recommended relying on

[610] Agadir's post-quake architects did, however, produce a handful of exceptions to this directive, most notably the CHU Evolving Housing project which aimed to adapt rammed-earth construction methods to fit the requirements of the antiseismic codes. Chaouni, "Depoliticizing Group GAMMA," 79.

reinforced concrete and modern design principles while at the same time incorporating lessons learned from the unexpected failure of certain European-style structures during the earthquake. The AISI team proposed adopting the building regulations of the Structural Engineers' Association of California, which were formulated to resist earthquakes of a much higher magnitude than those experienced in Morocco.[611] One French polytechnician, recommended taking the AS 55 code—established in Algeria after the 1954 earthquake in Orléansville—as the basis for developing a set of norms suited to Morocco's terrain and seismicity. He also reflected on the consequences of adopting these codes given Morocco's current labor system:

> It must be especially noted that in most under-developed countries, it is common to build with masonry, using a minimum of modern materials, by taking advantage of a workforce that is abundant, but sometimes insufficiently qualified and supervised. "Seismic" security can only be obtained by abandoning these construction techniques for more modern methods, whose cost is undoubtedly much higher.[612]

While engineers had little to say about the colonial forms of displacement and dispossession that had rendered Moroccan labor cheap and "abundant," they cast unsupervised workers as a source of seismic danger. In contrast to late-colonial crisis technologies that sought to harness and regulate local forms of skill and knowledge in the slums of Casablanca, risk management in Agadir aimed to expel local practices from the construction process entirely. As reconstruction progressed, however, cinder blocks, housing cooperatives, and low-interest loan packages—technologies like those deployed during slum removal campaigns in Casablanca at the end of the Protectorate—came to undergird expert-driven visions of Agadir's rebuilding and modernization.

Reconstructing Property and Postcolonial Governance

In a review celebrating Agadir's reconstruction, King Hassan II expounded his vision of

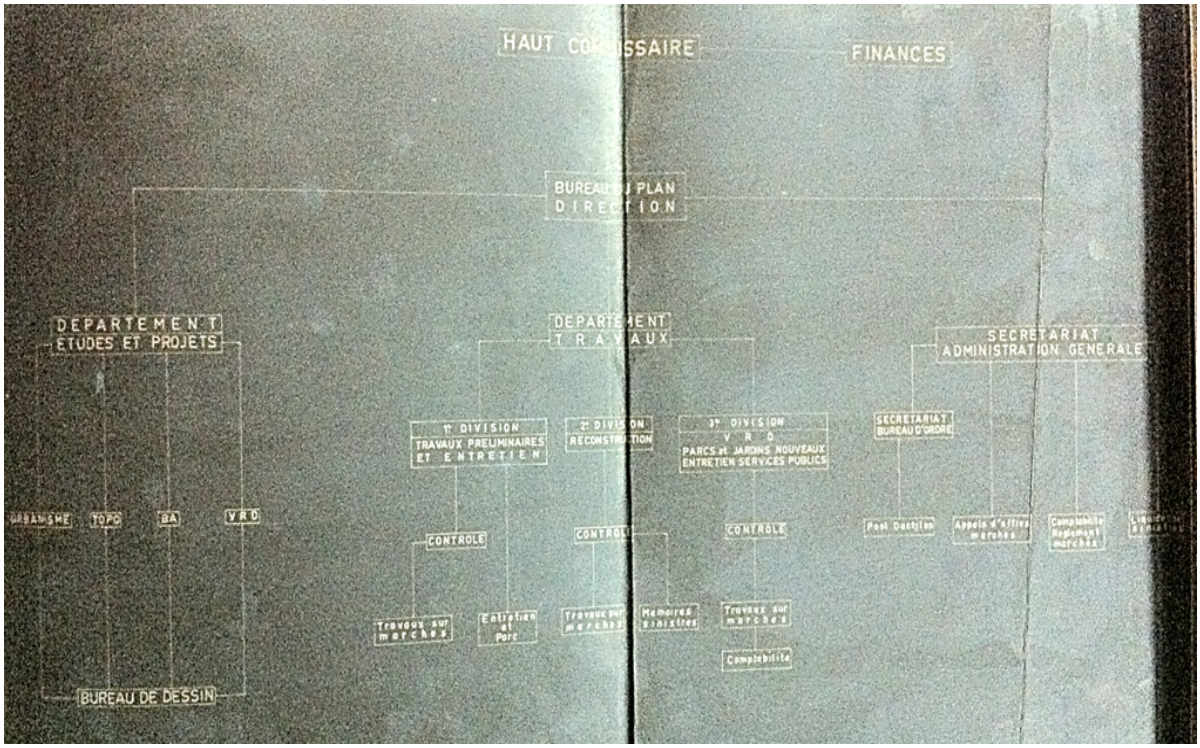
[611] American Iron and Steel Institute, 83.
[612] Vialet, *Séisme du 29 février 1960 à Agadir résistance séismique des constructions*, 1960, BISR, 27.

the "total city" based on a "harmony between Nature and Man" and achieved through the work of scientists, engineers, and urban planners—a city "remade by Man and for Man, by the Moroccan for Moroccans and for Morocco."[613] Harmony in this context meant the reshuffling of risk. Pursing Hassan's vision of Agadir's antiseismic future, the Haut-Commissariat à la Reconstruction d'Agadir (HCRA)—the administrative body charged with rebuilding—adopted a variety of measures to limit the potential damage of the next major earthquake. Construction codes, building bans, and land expropriations aimed at managing seismic risk created new vulnerabilities and extended the state's technical, aesthetic, and political influence over local building practices and the built form of the city to a greater degree than ever before.

The HCRA's organizational structure was inscribed with a vision of the relationship between decolonization and technical governance. The Commission was divided into three sections: planning (in the Department of Studies and Projects), implementation (in the Department of Public Works), and administration (in the General Administrative Office).[614] Mapped out in a 1961 report, the HCRA's *organigramme* was aspirational in a dual sense.

[613] "Message de S.M. Hassan-II," *A+U Revue africaine d'architecture et d'urbanisme* 4 (1966), 1.
[614] P. Philippon, "Étude préliminaire à la reconstruction d'Agadir," Direction de l'urbanisme et de l'habitat, 1961, BMHPV, 19.

Figure 22: The "Organigramme" of the HCRA



P. Philippon, "Étude préliminaire à la reconstruction d'Agadir," Direction de l'urbanisme et de l'habitat, 1961, BMHPV.

The document outlined an ordered framework for the extension and multiplication of the Commission's different offices and performed the functional separation of its tasks: planning, building, and governing. Distinguishing the last two from the former maintained the distinction between planning—the supposedly rational, cognitive, abstract, production of knowledge—and practice—knowledge's messy implementation. At the same time, dividing the first two activities—planning and building—from the latter—governing—suggested the apolitical nature of technical assistance. French technical assistants participated in and oversaw the activities of the first two departments but played no role in the third. According to the logic of the HCRA's *organigramme*, if French experts were to act in Morocco's new post-independence

administrative order, they had to act technically. They could not govern directly. In structure and in practice, the HCRA asserted that colonial continuities—in terms of regulations, techniques, and even personnel—were acceptable after decolonization as long as they were confined to domains and activities designated as "technical."

During the French Protectorate, the primary concern of the Ministry of Public Works in Agadir had been the construction, improvement, and maintenance of the city's port, rapidly becoming the most important in southern Morocco.[615] Colonial engineers also oversaw the construction of a few large hotels and administrative offices, but everyday practices of building and dwelling remained largely unregulated for the majority of the population. As a mobile technoscientific object, seismic risk allowed the Haut-Commissariat to extend its influence over these practices. As one report claimed, "geological studies made it possible to locate [safe] zones for building. Antiseismic regulations elaborated by a group of specialist technicians were strictly applied to all repaired or reconstructed buildings."[616] The "Normes d'Agadir 1960"—Agadir's new antiseismic building codes—were the first of their kind in Morocco. The Ministry of Public Works charged a group composed of members from a variety of administrative branches and professional organizations with formulating these regulations. While, the group included participants from the Order of Architects, the Union of Moroccan Entrepreneurs, and the construction industry, representatives of Morocco's leading labor unions and the earthquake's victims were notably excluded. The authors of the code cited the American and German missions to Agadir as well as research conducted under Rothé's supervision as the primary sources of site-specific data. In addition, members of the group studied antiseismic regulations in Algeria, Chile, Greece, Japan, Portugal, Turkey, and the U.S and strove to align the "Normes" with international

[615] "Port Agadir aménagements divers, 1935-1947," box E92, AM.
[616] Al-mandūbiyya al-sāmiyya li-l-ʿādat al-binā', "Agadir 1383," 1963, BMHPV, 1.

standards. Large sections, however, were drawn directly, almost word for word, from French construction codes of the period.[617]

Within the code itself, authors regimented every aspect of the construction process from the choice of terrain to the variety of gravel used in concrete production. Work that previously would have been the prerogative of the individual laborer, such as the choice of rubble stone for a masonry wall, now fell under the code's purview. The fabrication of concrete, the methods for selecting stones in masonry constructions, the practices for treating and moistening bricks were all subjected to regulation and standardization. The code required that builders provide frequent written reports to architects and the administration, assuring their influence over every step of the construction process. Regulations mandated the technical minutia of the *main d'oeuvre* but were relatively silent about the work of architects. A particular interpretation of the 1960 earthquake supported this hierarchy of knowledge. According to the code's authors, "the experience [of the earthquake] essentially proved that in Agadir and elsewhere construction projects executed in conformance with the rules of art [i.e. by professional architects] performed much better, for the most part, than those in which these rules were more or less neglected."[618] Through these measures, the code circumscribed the movements and technical decisions of workers and masons and made architects, engineers, and the municipal authorities jointly responsible for their supervision.

Regulations also blended technical and aesthetic judgments, mandating simple forms and banning excessive ornamentation in design. Authors discouraged the use of lathwork, balconies,

[617] "Normes d'Agadir 1960," *Bulletin officiel* 2516 (January 13, 1961), 6-24.
[618] "Normes d'Agadir 1960," 16. For a detailed study of the links between reinforced-concrete construction techniques and the reorganization of occupational risks and labor hierarchies see Amy E. Slaton, *Reinforced Concrete and the Modernization of American Building, 1900-1930* (Baltimore: Johns Hopkins University Press, 2001).

and acroteria.[619] According to the code, these measures insured the seismic security of the city's structures and supported the dominant aesthetic vision guiding reconstruction. Inspired by Le Corbusier and based on the CIAM charter's principles of uniformity, separation, simplicity and functionality, Agadir's new architectural and urban forms equated safety with unadorned exteriors. Monumental architecture in unfinished concrete exemplified the building practices mandated by the code. In the new courthouse designed by Elie Azagury—one of the first French-educated, modernist architects from Morocco—the line blurred between technical and aesthetic considerations. The period's planners found "the rough, *béton brut* frame…very assertive and the antiseismic norms reinforce this, the columns and beams have large sections giving a very noticeable impression of security."[620] Unfinished concrete and thick, solid columns gave architectural form to the new administrative *ethos* of seismic risk management.

The administration also enforced Rothé and Ambroggi's recommendations, prohibiting rebuilding in the area to the north of the Oued Tildi—an area including the former neighborhoods of Founti, Talborjt, the Kasbah, and Yachech. This zone was then reforested as part of an urban policy of creating green spaces to encourage the return of the tourism industry to Agadir. The ban also inspired the HCRA's decision to reform the city's land tenure system. As one report remarked, "when it was decided, following seismological and geological studies, to move the center of the city toward the South in order to distance it from the dangerous zone, it became obvious to planners that it was impossible to imagine a plan that was logical, rational, and adapted to the terrain given the existing fragmented mosaic of private property."[621]

To "rationalize" this mosaic, the administration expropriated nearly all privately held

[619] "Normes d'Agadir 1960," *Bulletin officiel* 2516 (January 13, 1961), 7-15.
[620] Claude Beurret, "Architecture et aménagements publics," *A+U Revue africaine d'architecture et d'urbanisme* 4 (1966), 41.
[621] "Agadir 1960-1965," 5; Wizārat al-anbā', 36.

property, declaring this move an essential step in the rebuilding process.[622] During the French Protectorate, Agadir's colonial municipal government had already established the precedent of seizing private lands considered "essential for the public interest" (*d'utilité publique*).[623] The earthquake provided the opportunity to radically extend this principle. Around 400 hectares, or approximately four fifths of the usable land in the city, came under the state's control at this time. Only those property owners whose structures the HCRA labeled "slightly damaged" retained the right to keep their land.[624] The administration intended to redistribute seized properties through a system of compensation in which victims were assigned plots according to city's new urban plan. Government compensations, however, did not apply to individuals who lacked the official title to the homes they inhabited before the earthquake, a group that included a large percentage of residents from the Kasbah, Founti, and Yachech. Since these victims remained outside the redistribution system, the HCRA envisioned accommodating them in public housing projects instead.[625] Ultimately many of the titleless survivors' dossiers simply remained unprocessed at the time of the High Commission's dissolution. Some were eventually given access to low-interest loans for purchasing small plots of land from the city.[626] For survivors themselves, however, this process was far from transparent. One resident, Lahcen Roussafi recalled submitting a dossier to the HCRA in 1960 and not receiving an indemnity until 1972.[627] His own family and many others from the former Ichache neighborhood initially assumed that land

[622] Wizārat al-anbā', 20.
[623] "Projet de Dahir," September 3, 1945, Contrôle des municipalités, Résidence Generale de la République Française au Maroc, box D661, AM. For an example of how planners, engineers, and a variety of social reformers deployed notions of *utilité publique* or "public interest" to remake urban spaces in nineteenth-century France see Rabinow, *French Modern,* 291.
[624] Beurret, "Architecture et aménagements publics," 12.
[625] P. Philippon, "Étude preliminaire à la reconstruction d'Agadir," Direction de l'urbanisme et de l'habitat, Ministère de l'intérieur, Service de documentation, 1961, BMHPV, 12.
[626] Mohamed Mounib, Interview, August 16, 2017.
[627] Lahcen Roussafi, Interview, August 17, 2015.

granted to them by the HCRA was compensation for properties they had ceded immediately after the earthquake. It was only later officials informed them that they would need to reimburse the administration for their plots in the new city.

Land expropriations and construction codes were mutually reinforcing. Inhabitants whose property was seized had to follow building regulations in order to receive compensation from the state and the right to rebuild in the new city.[628] If property owners failed to meet the requirements established by the HCRA, which involved obtaining a series of authorizations for different stages of the construction process, they "risked losing the benefit of the state's aid" and the right to their plots.[629] The extensive demolitions carried out by the HCRA during the first year of the reconstruction also established a precedent that would intensify the precarity of Agadir's urban poor. Throughout the reconstruction period, the threat of demolition hovered over homes that failed to meet the city's new building and zoning regulations.[630] The HCRA's authority to issue residential permits (*permis d'habitation*) had even more wide-ranging implications. Following a peaceful protest of survivors at the provincial seat in early 1962, officials dispatched the police to round up participants in a number of Agadir's temporary neighborhoods. After detaining dozens of suspected protesters, the police demanded to see their residential permits. None could produce them. These individuals were then expelled from temporary housing and forcibly returned to their "cities of origin."[631]

New building codes also created an elevated demand for concrete. Only a year after the earthquake, with the nearby plant in Anza already producing approximately 70,000 tons of

[628] Mohamed Cheref, "Agadir une villle orpheline de son passé: Mesurer le présent, stimuler le futur," in *La villle d'Agadir: Reconstruction et politique urbaine*, ed., Majmūʿat al-baḥth wa-al-dirāsāt ḥawla al-janūb al-maghribī (Rabat: Imprimerie El Maârif Al Jadida, 1997), 169.
[629] Al-mandūbiyya al-sāmiyya li-l-ʿādat al-binā', "Agadir 1383," 1963, BMHPV, 2.
[630] *Rapport sur la suppression du Haut-Commissariat,* 8.
[631] "Agadir an III," *L'avant garde,* 24 February 1962, 4.

cement annually, the administration envisioned opening new quarries in the area to keep pace with reconstruction. By 1974, cement production had risen to 310,000 tons annually. In the early years of the reconstruction, much of this demand was driven by the stylistic choices of modernist architects in Agadir. Members of Morocco's group GAMMA carried out a number of high-profile construction projects for apartments and government buildings in the new city center. Azagury as well as Jean-François Zevaco, Mourad Ben Embarek, Henri Tastemain, and others opted for a locally adapted style of brutalist architecture that pushed the association of monolithic concrete forms and seismic security to its logical extreme. As the chief architect for the HCRA, Ben Embarek encouraged the reliance on *béton brut* as a means to reassure anxious and traumatized survivors. Only twenty-six years old at the time of his appointment, Ben Emarek and his team also aimed to avoid the assertion that the city had been rebuilt by Europeans or was in any way a continuation of colonial urbanism. In the reconstructed city, however, much of the new Ichache neighborhood was built using the *trame* Écochard and other models and techniques adapted from postwar Casablanca.[632]

Ultimately, the administration recognized the impossibility of providing concrete-panel apartment blocks to all of the city's inhabitants. As an alternative to "traditional" stone masonry—deemed too seismically risky—engineers suggested cinder blocks, a weaker but cheaper material, for more economical construction projects.[633] The preference for cinder blocks in low-cost housing construction was firmly ingrained within the Moroccan administration by this time. Many of the difficulties with new low-income housing in Agadir, however, arose not

[632] Ahmed El Allali, Interview, August 10, 2017.
[633] J. Salles, "Séisme et construction: quelques idées simples sur les séismes," *A+U Revue africaine d'architecture et d'urbanisme* 4 (1966), 69; Ahmed Belkadi, "Production et besoins en matériaux de construction à Agadir: entre le cout économique et 'le souci environnemental,"' in *La villle d'Agadir: Reconstruction et politique urbaine*, ed., Majmūʿat al-baḥth wa-al-dirāsāt ḥawla al-janūb al-maghribī (Rabat: Imprimerie El Maârif Al Jadida, 1997), 119; Philippon, 17.

simply from the materials themselves but also from cost-cutting construction methods that rendered many structures simply unlivable during the summer months. Cinder blocks provided extremely poor thermal protection compared to brick or rammed-earth constructions that were common in the region prior to the earthquake. In Agadir—as elsewhere in Morocco—insulation for cinder block structures was often no thicker than 3-6cm compared to the requirement of 25cm in many French construction codes.[634] Uncomfortably hot and humid interiors were the inevitable result of such methods.

These measures had a number of unforeseen consequences. The demand for expert oversight and expensive materials created a prohibitively high cost of living in the city, pushing Agadir's poorest inhabitants to the periphery where building codes were less stridently enforced. In many cases, this placed residents dangerously close to centers of cement production exposing them to toxic substances and increasing their susceptibility to respiratory diseases. Ahmed Belkadi has suggested that accelerating cement production and an explosion in the number of quarries near the city have also caused severe damage to the local soil and vegetation. Land expropriations and the system of compensation also tended to favor speculators, leaving many of the earthquake's victims permanently displaced. Agadir also became a staging ground for the 1975 Green March, and a number of the March's unpropertied participants returned to the city and settled in its expanding *bidonvilles* following the annexation of the Western Sahara. A little more than a decade after the official end of reconstruction over a quarter of the city's population resided in slums.[635]

[634] Karl Benz, Interview, September 2, 2017.
[635] Belkadi, 117-20; *Rapport sur la suppression du Haut-Commissariat*, 27; Cheref, 170-75.

Responding to Reconstruction

Agadir's new risk regime made the technical offices of HCRA the conduit through which reconstruction—the reorganization of space, land, and labor—had to pass. The category of seismic risk fashioned by scientists and engineers made these projects and policies possible—paving the way for an increasingly unequal distribution of land and resources in the post-quake city. At the same time, technoscientific work in Agadir legitimatized the territorial priorities of the postcolonial Moroccan state by sanctioning the city's rapid reconstruction near its former site.

Agadir's residents reacted to these new directives for designing and building their homes in complex and (at least for the administration) unexpected ways. During the early days of the reconstruction as minor aftershocks in the area continued, many survivors refused to move into the emergency housing provided by the administration, preferring instead to remain in tents. One engineer described a "general psychological state of mind that was hostile to urban renovation" among the populace.[636] Critics of reconstruction policy leveled charges of corruption against bureaucrats and planners. One journalist from the newspaper of Morocco's largest labor union, the Union Marocaine du Travail (UMT), described the arrival of two carpenter-artisans, either friends or relatives of two administrators, who received 4.5 and 12 million francs respectively for their piecemeal work.[637] The workmen then presumably returned a large portion of these funds to the officials who had granted them these generous contracts. During a strike carried out by Agadir's low-level state employees, another organizer asserted that members of the government had surreptitiously seized portions of the national solidarity tax intended for the earthquake's

[636] Robert Bombezy, "Les équipements," *A+U Revue africaine d'architecture et d'urbanisme* 4 (1966), 29.
[637] "Agadir an III," *L'avant garde,* March 3, 1962, 5.

victims.[638]

During the reconstruction process, survivors were grouped into neighborhood blocks on parcels of land that the HCRA had redistributed and slated for rebuilding. Each block had a representative—in some cases selected by the residents themselves—whose task was to approve the plans produced by a Commission architect. One ex-official, Mohamed Mounib, who worked for Agadir's governor at the time described how this system led to frequent abuses with local representatives often designating the best parcels as their own.[639] In one case, Mounib recounted how a neighborhood representative used his status to claim the entire block as his personal property and advance his case with the HCRA. Another survivor, Abdelkarim Abou El Mahassine, recalled how a frustrated Moroccan veteran of WWII in one neighborhood block complained to the HCRA, "why did we fight in the war for French architects to put us and our children in rooms that are like prison cells."[640] Criticism of the HCRA's policies was not limited to the architectural features of the simple one or two story houses designed by commission architects. Former shopkeepers and merchants especially found it difficult to reestablish their livelihoods under the new land tenure system. Mounib noted that this group had a profound aversion to the taking out mortgages, which at the time were still extremely rare in southern Morocco. Rather than go into debt to finance the rebuilding of their homes and businesses, many of these ex-merchants chose instead to sell off their land titles, in some cases at less than a quarter of their estimated value. Speculation intensified while large investors were able to gain access to much of the coastal land in the reconstructed city by buying out survivors who hoped to avoid the new mortgage system. Agadir's post-quake tourist industry was born out of this context

[638] "Malgré la repression et l'état de siège grève générale à Agadir," *L'avant garde,* January 6, 1962, 2.
[639] Mohamed Mounib, Interview, August 16, 2017.
[640] Abdelkarim Abou El Mahassine during Interview with Mohamed Mounib, August 16, 2017.

of speculation as sites like the Hotel Camelot and Club Med were built on land acquired from survivors at a fraction of its value.[641]

In late 1961, dissatisfied residents of the tent cities and temporary housing projects formed a Victims' Committee to participate in decision-making on matters related to the reconstruction. Lahcen Roussafi suggested that the Committee was loosely linked with leftist politics in Agadir at the time.[642] In spite of early organizing successes, they were largely shut out of the planning process. Among their initial suggestions, the Committee proposed creating an independent cooperative that would study individual construction projects and purchase building materials in bulk. By envisioning a cooperative that "would take steps to obtain all of the materials [necessary for individual rebuilding projects] under the best conditions," the Victims' Committee criticized the HCRA's failure to adequately provision building supplies.[643] The proposed cooperative, in contrast, articulated a vision of material equality among victims. Though limited in scope, the project cast the creation of new structures "up to code" as a collective endeavor. As a rival strategy for planning and provisioning, the Committee's proposal directly challenged the HCRA's authority over reconstruction and gestured toward an alternative political future for the city.

Housing cooperatives, like those established in Casablanca during the final years of the Protectorate, held an ambiguous status in the plans of the HCRA. On the one hand, cooperatives continued to offer a relatively inexpensive means of rebuilding by harnessing the skill and labor of local residents. The engineers who developed the Normes d'Agadir, however, had already singled out such local methods as a dangerous source of seismic insecurity. Moreover,

[641] Mohamed Mounib, Interview, August 16, 2017.
[642] Lahcen Roussafi, Interview, August 5, 2015.
[643] "Agadir an III," *L'avant garde,* 24 February 1962, 4.

cooperatives, even those established by state officials, appeared to threaten the HCRA's unified planning vision and gradually came to be associated with oppositional politics. Following the official end of reconstruction, the newly appointed Minister of Housing, Hassan Zemmouri, expanded the use of the cooperative system both in the Agadir region and elsewhere. Zemmouri had been a moderate member of the UNFP (National Union of Popular Forces)—a leftist party that emerged after independence as the main electoral opponent of Istiqlal while advocating for limits to royal authority. After the 1971 attempted coup in Skhirat, Zemmouri, was given the ministerial portfolio for housing and urbanism as a kind of conciliatory gesture. Zemmouri's ministry, however, was allotted a skeletal budget and tasked with the resolution of the "housing crisis" across the country.[644] Without adequate funding for public housing, Ahmed El Allali, Zemmouri's representative in the south opted to create cooperatives that would provide technical supervision for state employees who pooled their resources to construct their own homes.[645] Land held by the ministry was granted to these cooperatives who adapted the standardized designs of state architects. Eventually, however, the cooperative model and Zemmouri himself fell out of favor and were replaced by a series of regional public-private entities known as ERACs (Etablissements régionaux d'aménagement et de construction). Like the CIFM before them, and their present-day successor, Al Omrane, the ERACs effectively acted as a technical supervisor and intermediary between low-income borrowers and Morocco's banks. El Allali implied that such public-private initiatives won out over cooperatives, because high officials in Rabat became suspicious that residents might extend the practice of organizing without direct state oversight beyond the domain of housing construction.

Not all local responses to reconstruction highlighted the oppressive character of Agadir's

[644] Ahmed El Allali, Interview, August 10, 2017.
[645] Ahmed El Allali, Interview, August 10, 2017.

new antiseismic architecture and policies. In a brief autobiographical text about her childhood during the reconstruction, the historian Mina El Mghari recalled the prefabricated shelter that her parents initially resided in after the disaster and the gradual, piece by piece, construction of their new home *"en dur*."[646] El Mghari characterized the city as "certainly a Moroccan architectural production, but with new specificities, traits of…modern architecture."[647] She described visiting the Rada Barnen clinic, designed by Azagury—a building that "offered light and serenity, and to break up the monotony of the exterior forms, the architect provided each part with an original structure where concrete was the authoritative feature."[648] For El Mghari, Agadir's reconstruction remained a marker of national solidarity and technical achievement in the aftermath of decolonization. Concrete, the antiseismic material of choice, was at the center of this vision. "Concrete, widely used in Agadir, signified this desire to build solid and resistant structures. An extraordinary emblem of force and sophistication."[649] What is striking in both critical and celebratory accounts of Agadir's reconstruction is the constant equation of concrete construction with notions of security. Whether the bodily containment of the "prison cell" or the mastery of seismic nature in "solid and resistant structures," Agadir's new concrete forms restricted and regulated the movement, techniques, and livelihoods of residents. Debates continued within and outside of the administration about whether this new architecture—designed by both Europeans and Moroccans—was culturally suited to the needs of the local population or a thinly veiled colonial imposition. Yet behind these debates, a form of technopolitics emerged almost unquestioned, an unstated assumption about who could determine the concrete future not just of

[646] Mina El Mghari, "Balade mémorielle dans l'Agadir de mon enfance." Short text cited with permission of the author.
[647] Mina El Mghari, "Balade mémorielle dans l'Agadir de mon enfance."
[648] Mina El Mghari, "Balade mémorielle dans l'Agadir de mon enfance."
[649] Mina El Mghari, "Balade mémorielle dans l'Agadir de mon enfance."

Agadir but of all Moroccan cities.

Conclusion

During Agadir's post-quake reconstruction, the technoscientific project of risk management was inscribed with debates about the nature of decolonization. The mostly French geologists, seismologists and engineers who installed Agadir's seismic risk regime attempted to ban local construction practices while designating their own involvement in the rebuilding as a purely technical endeavor. These experts navigated disciplinary requirements, material constraints, and the political directives of a newly independent Moroccan polity. The Moroccan administration's vision of a seismically secure modernist city built "by Moroccans for Moroccans" was entwined with a vision of decolonization that downplayed the political nature of French technical assistance.[650] Both visions also continued to rely on colonial crisis technologies—designed to deal with the financial and political complexities of slum clearance in postwar Casablanca—to fill in the gaps of ambitious modernization projects aimed at achieving seismic security.

Nearly a decade after the earthquake, leftist observers of the reconstruction process had begun to articulate the links between anti-seismic architecture and what was effectively a massive land grab. One article in the literary and political review *Souffles-Anfās* foresaw that "the new Agadir, created in its entirety by real estate magnets, will remain a living contradiction, a monumental farce, a concrete trap destined for the exploitation of man."[651] The author, identified only as M.R., saw in the administration's promises of modernization, harmony, and

[650] "Message de S.M. Hassan-II," *A+U Revue africaine d'architecture et d'urbanisme* 4 (1966), 1.
[651] M. R., "Cinema: Retour en Agadir de Afifi," *Souffles-Anfas* 13/14, no. 1–2 (1969), 40. For a contextualization of the journal and its role in Moroccan political culture see Anouar El Younssi, "Souffles–Anfās and the Moroccan Avant-Garde Post-Independence," *The Journal of North African Studies* 23, no. 1–2 (March 2018): 34–52.

seismic security a reinforcement of preexisting political structures. “We return to Agadir by way of the new Mosque in concrete and iron symbolizing the survival of the established order, the past dominating the present. Nothing has changed. And yet, everything has been done to create this illusion: a hastily imported and deliberately avant-garde architecture.”[652] The claim that nothing had changed in a reconstructed Agadir, however, ignored how risk management had become the vehicle for the articulation of new forms of politics. At a moment when the official process of decolonization provoked questions about the role of French expertise and the presence of French experts within the project of postcolonial development, the eradication of “local” construction methods in Agadir is striking. Beyond debates about the identity of experts and the architectural forms they produced, however, Agadir’s risk management regime placed new limits on the technical and political agency of residents while creating new opportunities for dispossession, exposure, and the rise real estate capital. As the following chapter will show, elsewhere in the Moroccan administration debates about decolonization and the relationship between “French” expertise, international modernist architecture, and local knowledge and technologies would take a sharply different turn.

[652] M. R., “Cinema: Retour en Agadir de Afifi,” *Souffles-Anfas* 13/14, no. 1–2 (1969), 41.

CHAPTER 5

ENVIRONMENTAL PROTECTION

AND THE POSTCOLONIAL URBAN ORDER

June 25, 1975 marked the beginning of the third National Environmental Colloquium, the culmination of three years of attempts to implement new environmental policies in Morocco. The conference opened with a speech by Hassan Zemmouri, the highest ranking official present with a growing ministerial portfolio that had come to include urbanism, housing, tourism, and finally "the environment." A Protectorate-era graduate of the Collège d'Azrou—a training ground for future members of Morocco's civil and military elite—Zemmouri had previously held a number of administrative posts under Mohammed V and his son Hassan II.[653] He had presided over the country's first two Environmental Colloquia, but unlike previous years, in 1975 Zemmouri elected to deliver his opening remarks in Arabic. During the 1960s and 1970s, the so-called "technical" branches of the postcolonial Moroccan state continued to produce the majority of their reports in French in spite of growing support for Arabization among various groups of

[653] On elite formation and the College of Azrou see Mohamed Benhlal, *Le collège d'Azrou: Une élite berbère civile et militaire au Maroc, 1927-1959* (Paris: Karthala Éditions, 2005). Initially a member of the UNFP and an advocate of wide-ranging rural reforms in the early 1960s, Zemmouri entered his post in 1972 as one of the few moderate leftists in the government at the time. Abdellah Hammoudi suggests that Zemmouri was actually involved in "killing" the agrarian reforms during his first ministership. See John Waterbury, "Marginal Politics and Elite Manipulation in Morocco," *European Journal of Sociology / Archives Européennes de Sociologie* 8, no. 1 (May 1967), 101; Abdellah Hammoudi, *Master and Disciple: The Cultural Foundations of Moroccan Authoritarianism* (Chicago: University of Chicago Press, 1997), 165.

actors within the administration. In his introduction, Zemmouri argued that "environmental problems are not theoretical problems with varying philosophical perspectives but rather concrete, practical problems…[whose] solution will not be found by following the environmental programs of the international community.[654]" The King, he suggested, had made clear that the project of both urban and rural development—"the building of homes, schools, and clinics" in cities and villages—must take priority over abstract considerations like environmentalism.[655]

This juxtaposition of construction and environmental conservation—referred to as *al-muḥāfaẓa ʿalā al-bīʾa*—was not unique to Morocco, but part of an ongoing international debate among postcolonial nation states in the aftermath of the 1972 Stockholm Conference on the Human Environment.[656] The apparent tension between environmental protection and postcolonial development, however, took on a peculiar form in the Moroccan context. The concept of the environment provided experts and administrators with a new set of arguments and rationalities for imagining and managing the country's urban crisis. The late 1960s and early 1970s presented a set of distinct technopolitical problems that officials attempted to address by combining earlier crisis technologies with new "environmental" logics.

The international context for debates about environmental policy in Morocco includes the postwar rise of institutions of "global governance" such as the United Nations.[657] The extent to

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[654] Hassan Zemmouri, "Opening Remarks," in *Comité national de l'environnement : 3ème Colloque national* (Rabat: Ministère de l'urbanisme, de l'habitat, du tourisme et de l'environnement, 1975), 558PO/1/188, CADN, 3.
[655] Hassan Zemmouri, "Opening Remarks," in *Comité national de l'environnement : 3ème Colloque national* (Rabat: Ministère de l'urbanisme, de l'habitat, du tourisme et de l'environnement, 1975), 558PO/1/188, CADN, 3.
[656] Rather than seeing the debates surrounding Stockholm as the "pitting of the North's environmental anxieties against the South's economic imperatives," Perrin Selcer has called for attending to the cross-cutting alliances and internal conflicts that complicate a straightforward reading of these debates as environmental protection vs. development. In the context of Morocco's postcolonial administration, however, the basic juxtaposition between development and environmentalism was often accepted, with urban experts like those in the CERF positioning themselves as intermediaries who could mobilize local knowledge to resolve this seeming contradiction. Perrin Selcer, *The Postwar Origins of the Global Environment, How the United Nations Built Spaceship Earth* (New York: Columbia University Press, 2018), 207.
[657] Ken Conca has discussed the special places of "environmental issues" within the UN's bureaucratic structure. Ken Conca, *An Unfinished Foundation : The United Nations and Global Environmental Governance* (New York :

which such institutions enabled forms of continuity or rupture with the formal structures of European empire has been the subject of much debate.[658] Recent scholarship has tended to suggest that spaces within the UN provided a venue—albeit an asymmetrical one—for an array of actors to debate the problems and promises of decolonization and the Cold War as well as emergent issues such as population growth and environmental degradation.[659] One striking example of how such debates worked *in action* was the 1972 Stockholm Conference and the various responses it produced from the "developing world." In one standard narrative, "Third World governments" saw the conference's proposed environmental programs as an attempted infringement on their capacity to industrialize and raise their people out of poverty.[660] Though a highly reductive reading of both the conference and its critics, this juxtaposition of "environmental protection" and "development"—and by extension the need for "sustainable development" to address this supposed impasse—was in fact one of the core lessons that national governments like Morocco's and later conferences would draw from Stockholm.

Some of these "Third World" critiques were later incorporated into the 1976 UN Conference on Human Settlements (Habitat I) in Vancouver which affirmed the "concern over the extremely serious condition of human settlements, particularly that which prevails in

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Oxford University Press, 2015), 16.

[658] See, for instance, Mark M. Mazower, *No Enchanted Palace: The End of Empire and the Ideological Origins of the United Nations* (Princeton Oxford: Princeton University Press, 2013). Other lines of inquiry into international institutions have concerned, for instance, their role in regulating and enabling the global spread of capitalism. Craig Murphy, *Global Institutions, Marginalization, and Development* (New York, NY : Routledge, 2005), 12.

[659] Glenda Sluga has noted, for example, how the meanings of internationalism and nationalism have been historically entwined in debates over who can lay claim to sovereignty. Institutions such as the UN have served as a venue for such debates that have at times included the claims of colonized subjects against imperial nation states. Glenda Sluga, *Internationalism in the Age of Nationalism* (Philadelphia: University of Pennsylvania Press, 2013), 2. Perrin Selcer has considered the UN as a "forum in which elite experts negotiated common standards, classification categories, and explanatory narratives." *The Postwar Origins of the Global Environment, How the United Nations Built Spaceship Earth* (New York: Columbia University Press, 2018), 8.

[660] Wayland Kennet, "The Stockholm Conference on the Human Environment," *International Affairs (Royal Institute of International Affairs 1944-)* 48, no. 1 (1972), 37.

developing countries."[661] The architects of the Vancouver Conference went to great lengths to recognize international inequalities and their impact on both environmental degradation and housing conditions. The conference's "Action Plan" called for a more equitable distribution of urban resources within national contexts and internationally, acknowledging at the same time that "foreign models must not dominate planning decisions which should be…implemented by local people making the best possible use of indigenous resources, within the context of local culture and environment."[662] This notion—that "indigenous resources" or "local culture" could somehow resolve the tension between environmental protection and development—was a position that urban experts in Morocco had articulated since at least the late 1960s.

While debates staged by international experts at UN conferences resonated in Morocco—shaping much of the official discussion about which environmental policies and programs should be adopted—this chapter is not primarily concerned with the relationship between international institutions and approaches to governance in Morocco.[663] Instead, it considers how international debates about environmental protection helped frame, and at times to obscure, a shifting relationship between urban experts, the technologies they relied upon, the nature of urban unrest after independence, and the place of "local knowledge" within the construction economy. Most of the actors advocating for new "environmental" policies in the kingdom were not international experts working for the UN, but rather individuals employed directly by the Moroccan state. Many of them were *coopérants* from France or other European nations who worked within

[661] United Nations, "The Vancouver Declaration on Human Settlements," in *Habitat: United Nations Conference on Human Settlements, Vancouver, Canada, 31 May to 11 June 1976* (Vancouver, Canada: United Nations Human Settlements Programme, 1976).
[662] United Nations, "The Vancouver Action Plan: 64 Recommendations for National Action at Habitat," in *Habitat: United Nations Conference on Human Settlements, Vancouver, Canada, 31 May to 11 June 1976* (Vancouver, Canada: United Nations Human Settlements Programme, 1976), 7.
[663] For an account of the postwar international networks constructed by Moroccan nationalists see David Stenner, *Globalizing Morocco: Transnational Activism and the Postcolonial State*, (Stanford, California: Stanford University Press, 2019).

ministries and municipal governments in the kingdom through bilateral accords. Some of these *coopérants,* like the colonial officials who preceded them, made their careers in various parts of the former French Empire, while others took up long-term posts in Morocco. Moroccan officials, architects, and planners composed another group—many of whom advocated for policies and programs to the left of those supported by the country's monarchy and the Istiqlal Party. Some of these local experts and officials promoted a process of "Moroccanization" that would see *coopérants* removed from key positions within the state and replaced by qualified Moroccans. While not necessarily sharing the same interests, both groups adopted a shared language, deploying terms like "environmental protection," "pollution," "development," "crisis," and "local" to sketch out a new role for urban experts—whether European or Moroccan—within the postcolonial state.

Like the French Protectorate before it, the urban initiatives of the postcolonial state were largely inspired by popular resistance. The first two decades of Morocco's independence witnessed a series of profound political disruptions. The eventual result of the student uprisings and attempted coups of this era was an aggressive reassertion of monarchical power and a dramatic intensification of state violence and surveillance. In October of 1958, two years after Morocco's independence and the territorial integration of the Spanish Protectorate in the North, violence erupted in the Rif, a mountainous, primarily Berber-speaking region in the formerly Spanish zone. While officially professing loyalty to the king, the rebels challenged the authority of Istiqlal and were subject to violent retaliation from the army and the palace. In spite of its failure, the uprising marked the Rif as a space of resistance and its residents as opponents of the centralizing tendencies of the *makhzan*.

At a national level, the late 1950s to early 1960s witnessed the emergence of the UNFP

(National Union of Popular Forces), headed by Mehdi Ben Barka, as the primary critic of the monarchy and the network of advisers, officials, and institutions coalescing around the core of the old *makhzan.* The party's repression during 1963 and 1964 culminated with the eventual abduction and death of Ben Barka in Paris in 1965.[664] Earlier that year, what began as a student protest in Casablanca morphed into a broad-based urban uprising—the largest since December of 1952. The UMT (Moroccan Workers' Union) and the UNEM, the national student union, both played a significant role in organizing the protests. After three days of violent clashes between protesters and security forces, hundreds were left dead. In the immediate aftermath, Hassan II declared a state of emergency that would last five years and would be shortly followed by two attempted military coups. Leftist political organizing continued during this period but was eventually curtailed by the campaign of disappearances that initiated the period known in Morocco as the "years of lead."[665]

Following the marginalization of the UNFP and the attempted military coups in 1971 and 1972, Hassan II set about recalibrating the Moroccan political system.[666] During the "years of lead" (s*anawāt ar-ruṣāṣ, années de plomb*), the monarchy harnessed and expanded informational infrastructures of urban surveillance whose groundwork had been laid in the final decades of the French Protectorate. Police, prisons, networks of informers reporting to the Minister of the Interior—these were the instruments of coercion aimed at creating a new kind of urban order. They were not, however, the only means through which the new *makhzan* solidified its place within an independent Moroccan polity. Hassan II worked to shore up support with both urban

[664] Zemmouri himself was briefly arrested in 1963. Maurice Buttin, *Ben Barka, Hassan II, De Gaulle: Ce que je sais d'eux* (Paris: Karthala Éditions, 2010), 158.
[665] Miller, *A History of Modern Morocco*, 166-171. Miller suggests that the period known as the "years of lead" lasts roughly from 1975-1990.
[666] William Zartman, *The Political Economy of Morocco* (New York: Praeger, 1987), 27.

and rural notables—in part by brokering access to capital.[667] As one of the country's largest private investors, the king could enable or obstruct participation in Morocco's "market economy"—tying the economic interests of the country's elite to the fate of the monarchy. Policies such as "Moroccanization" and documents such as the 1973-1977 Five Year Plan also represented attempts to build support for the central state among an emerging middle class of managers and technicians.[668] Observers of the period have paid much attention to the Hassan's attempts to revitalize the symbolic trappings of authority associated with the king's role as "commander of the faithful."[669] Scholars seeking to explain the "success" of the Moroccan monarchy during this period have emphasized its policies of patronage and divide and rule, its continued religious and cultural legitimacy for many Moroccans, and its willingness to deploy spectacular and subtle forms of violence to contain dissent.[670]

This chapter will suggest, however, that all of these strategies unfolded in relation to a new set of concepts and arguments that bolstered forms of expert authority upon which the *makhzan* continued to depend. By de-centering the monarchy's role in the transformation of Moroccan politics in the late 1960s and 1970s, I examine how novel "environmental" interventions produced forms of agency, vulnerability, and control that under-girded the violence of the years of lead. Throughout this period of states of emergency and unrest, Moroccan cities

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[667] Remy Leveau, *Le fellah marocain: Défenseur du trone* (Paris: Presses de la Fondation nationale des sciences politiques, 1985), 257. Cited in William Zartman, *The Political Economy of Morocco* (New York: Praeger, 1987), 29.

[668] Zartman, *The Political Economy of Morocco*, 28-29. "Moroccanization" refers to the replacement of European cadres within the Moroccan administration and private companies with Moroccan citizens.

[669] See for instance Abdellah Hammoudi, *Master and Disciple: The Cultural Foundations of Moroccan Authoritarianism* (Chicago: University of Chicago Press, 1997); Rahma Bourqia and Susan Gilson Miller, eds., *In the Shadow of the Sultan: Culture, Power, and Politics in Morocco* (Cambridge, Mass.: Harvard University Press, 1999); M. E. Combs-Schilling, *Sacred Performances: Islam, Sexuality, and Sacrifice* (New York: Columbia University Press, 1989); John Waterbury, *The Commander of the Faithful: The Moroccan Political Elite - a Study in Segmented Politics.* (New York: Columbia University Press, 1970),

[670] In addition to the above see Miller, *A History of Modern Morocco*; Susan Slyomovics, *The Performance of Human Rights in Morocco*.

remained "in crisis," but the contours of this crisis began to shift to include new types of environmental problems and technological solutions. The total percentage of Moroccan city-dwellers living in slums peaked during this period and rural migration to urban areas continued largely unabated. The Ministry of Interior's intensified investment in urban security networks proceeded alongside discussions of *al-muḥāfaẓa ʿalā al-bīʾa*—formulated in conversation with emerging international definitions of environmental pollution. New environmental framings of Morocco's urban problems also borrowed from late-colonial definitions of urban crisis and built upon crisis technologies.

Scholarship on North African environments since decolonization has tended to argue that intensifying degradation was the result of either the continuation of extractive colonial policies or the persistence of colonial "misreadings" of Maghribi landscapes.[671] While these approaches usefully highlight postcolonial continuities, both have overlooked debates surrounding the concept of the environment itself and conflicts over how to claim knowledge over it. Ultimately, the studies, debates, and projects of the late 1960s and early 1970s failed to coalesce into a coherent collection of environmental policies. This apparent "failure," however, belies the lasting impact of *al-muḥāfaẓa ʿalā al-bīʾa* on the role of urban experts in a postcolonial Morocco.

The introduction of environmental logics into state housing policies followed a subtle but significant shift in how officials and experts mobilized "local knowledge." Moreover, the category of the "local" adopted in planning circles grouped together a surprising collection of forms, materials, and practices—from earthen architecture in the Draa valley, to urban bricolage

[671] For examples of arguments about the persistence of colonial misreadings see Diana K Davis and Edmund Burke, eds., *Environmental Imaginaries of the Middle East and North Africa* (Athens: Ohio University Press, 2011); Diana K Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonial Expansion in North Africa* (Athens: Ohio University Press, 2007). For an approach based more on the analysis of changing state structures and land use practices see Will Swearingen and Abdellatif Bencherifa, eds., *The North African Environment at Risk* (Oxford: Westview Press, 1997).

in the slums of Casablanca, to regionally available clays or minerals with possible industrial applications. Moroccan housing officials and European technical assistants imagined the "local" as a reservoir of potential solutions to persistent housing shortages as well as a bulwark against the dangers of environmental degradation. Some in the Ministry of Housing and the CERF (Centre d'Expérimentation, des Recherches et de Formation) went as far as to describe their efforts as part of the ongoing process of decolonization. The "experimental" strategies elaborated by architects and urbanists working for the CERF ran parallel to the Ministry of Housing's deepening reliance on crisis technologies like those developed during the final years of the Protectorate. During the early 1970s, ministry officials continued to depend on state-backed loan packages, cooperatives, and prefabrication to address housing shortages and expanding slums.[672] Pollution was not simply added to the growing list of urban problems. The focus on environmental management— the expert identification of risks and resources—offered a new way of linking political security, technical surveillance, and approaches to development based on the appropriation of local forms of skill, knowledge, and matter. In the process, Morocco's urban experts cast themselves not as agents in state modernization projects but as intermediaries—navigating the tensions between development and conservation and, more importantly, between risks and resources.

Protection and Pollution in Postcolonial Planning

In the aftermath of the 1972 Stockholm Conference on the Human Environment, state planners across the former colonial world adopted the language and techniques associated with the "environment" as a multi-disciplinary object of knowledge and a resource to be managed.

[672] "Pour une nouvelle approche des problèmes de l'habitat," *Maghreb information*, August 30, 1972, 558PO/1/188, CADN. [no page number]

Morocco sent a delegation to participate in the conference and began holding its own environmental colloquia in the years following. The introduction of the concept of "environment" into expert and official communities working on housing and development in the country precipitated new definitions of and approaches to urban crisis. In some cases, this involved repackaging colonial assumptions about who was to blame for degradation and contamination.

Inaugurated one year after Stockholm, Morocco's first Colloquium on Environment and Development brought officials from the Ministries of Housing, Agriculture, Public Works, and others together with international experts in disciplines from architecture to ecology. As the head of the recently created Ministry of Housing, Urbanism, and the Environment, Hassan Zemmouri opened the conference in a speech that identified Morocco's cities as sites of striking environmental degradation.[673] Zemmouri suggested a close connection between Morocco's urban crisis and its emerging environmental issues. For the minister, many of the country's ecological problems had architectural roots. "Our traditional architecture," he lamented, "so well adapted to our way of life, our climate, our culture, is being demolished by a flavorless international architecture. Introduced under the cover of modernism and functionalism, it [international architecture] denatures urban landscapes, cuts us off from our origins, and makes us foreigners in our own agglomerations."[674] Against the backdrop of Morocco's degraded "built environment," Zemmouri juxtaposed the country's still relatively pristine "natural environment."[675] Environmental protection, he argued, should be both submitted to the principles of urbanism and

[673] Hassan Zemmouri, "Discour d'overture," in Ministère de l'urbanisme, de l'habitat et de l'environnement, "Journée mondiale de l'environnement: Colloque national : « Environnement et développement »," June 6, 1973, R347, BMHPV, 9.
[674] Zemmouri, 10.
[675] Zemmouri, 12.

subordinated to the imperatives of development. While working to situate the notion of the environment within earlier logics and forms of practice, Zemmouri still cited the "radical questioning" that the term's introduction had provoked within a matter of years—sparking new international debates and a renewed humanism.[676]

For French and Arabic speaking Moroccan officials in the 1970s, the adoption of the word "environment" itself raised questions of translatability. The Colloquium's participants identified the term as an "Anglo-Saxon" import, a synonym for the French word *milieux,* but one that had a precise technical definition.[677] The term encompassed the totality of physical and biological factors in a given setting—factors that could be enumerated and analytically isolated by different categories of scientists: geologists, ecologists, biologists, etc. As a new object of study, the "environment" opened up previously indistinct risks and resources to a community of experts working through different disciplinary paradigms to craft a composite image, an environmental whole. Within this vision, the degree to which the environment was determined by either human labor or nature was directly proportional to the "technical capacity of civilization."[678] In cities, for instance, "natural processes are less perceptible in spite of the fact that they condition the consequences of human intervention…the drama results from what human action, whether voluntary or not, is capable of provoking in terms of mutations, disrupting existing rhythms, putting in place new systems of physical relations, [etc.]…."[679] This pressumed need to disentangle the effects of nature from human labor in Moroccan cities highlighted the central role of urban experts, who were supposedly adept at making such

[676] Zemmouri, 24bis.
[677] *Colloque national: Environnement et développement* (Rabat: Ministère de l'urbanisme, de l'habitat et de l'environnement, June 6, 1973) R2487, BMHPV, 1.
[678] *Colloque national: Environnement et développement*, R2487, BMHPV, 2.
[679] *Colloque national: Environnement et développement*, R2487, BMHPV, 3.

evaluations.

Within the conference proceedings, the Ministry of Urbanism, Housing, and the Environment complied a provisional dictionary of environmental terms based on the work of a group of Swiss and Soviet scientists whose definitions would be adopted by various branches of the Moroccan state. The term *"*pollution," which Moroccan officials and French technical assistants had previously used flexibly and in a polemical sense, now acquired a narrow definition. While *pollution* occasionally appeared in state records from the colonial period, *insalubrité* was the primary category deployed by Protectorate officials to convey the notion of harm—whether toxic, sonic, or moral—emanating from a given setting and affecting individual bodies. Originally a product of 19th century public health campaigns that targeted the moral and physical deterioration of medieval urban cores in modernizing French cities, *insalubrité* in colonial Morocco singled out both precolonial *mudun* and the emerging forms of slum housing on the peripheries of cities like Casablanca.[680] Unlike the concept of *insalubrité,* in which forms of harm are rooted in the *milieu* itself, *pollution* now signified the "addition to the environment of any substance (solid, liquid or gas) or form of energy (such as heat, sound or radioactivity), in quantities that exceed the environment's capacity for absorption."[681] As an "addition to the environment," pollution could be made visible only through precise calculative techniques. It was no longer a matter of public perception but of expert estimation.[682]

The concept of pollution as a measurable, and not necessarily perceptible, "addition" to

[680] See for instance Ellen J. Amster, *Medicine and the Saints: Science, Islam, and the Colonial Encounter in Morocco, 1877-1956* (Austin: University of Texas Press, 2013).
[681] International Union for Conservation of Nature, "Dictionnaire de la conservation de la nature," (Morges, 1973) reprinted by le Ministère de l'urbanisme, de l'habitat et de l'environnement, Rabat, 1973, R2489, BMHPV.
[682] In a 1986 doctoral thesis describing the advent of an urban environmental policy in Morocco, Mohammed Jbara also distinguished the technical version of the term *pollution,* a "quantitative (generally measurable)" category, from *nuissance*, a notion that was "broader and more qualitative, encompassing psychological components." Mohammed Jbara, "Habitat urbain et environnement au Maroc" (PhD, Université de Bordeaux 1, 1986), M245, BMHPV, 94.

the urban environment represented a departure from the work of Protectorate urbanists who used the term infrequently and in a far more general sense. With this shift, establishing the presence or absence of potential harm in a given urban setting came to depend less on the senses and impressions of either officials or residents. The quality of housing and other urban amenities was no longer in and of itself a defense against contamination or degradation. Instead *pollution* relied on expert analysis of potentially invisible forms of harm.[683] At the 1973 Colloquium, the novelty of this definition—based on the work of an international community of scientists—encountered the messy realities of postcolonial rule and resilient Protectorate-era assumptions about the types of objects and people who could become the target of a future environmental policy.

During the early 1970s the Commission Nationale du Développement Régional (CNDR) produced a series of studies outlining Morocco's "environmental problems." This list included, erosion, deforestation, the distribution of water, sanitation, and the degradation of coastal zones. Explicitly excluded from this list of "environmental problems" was the issue of industrial pollution.[684] Officials at the CNDR noted that with the rare exception of sugar refineries in the Gharb and the substances they released into the Sebou River—a problem classed under "water distribution"—it was still too early to speak of industrial pollution in Morocco.[685] Situating the kingdom as an underdeveloped country occluded certain categories of risk and exposure associated with the industrialized world.[686]

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[683] This is not to suggest that earlier forms of public health practice rooted in the concept of *insalubrité* disappeared, but rather that they were joined by new ways of measuring and managing potential harm that assumed the basic invisibility of pollution.

[684] "Les travaux faits par la C.N.D.R. sur le problème de l'environnement: Les problèmes spécifiques du Maroc," in *Colloque national: Environnement et développement* (Rabat: Ministère de l'urbanisme, de l'habitat et de l'environnement, June 6, 1973) R2487, BMHPV, 12.

[685] "Les travaux faits par la C.N.D.R. sur le problème de l'environnement: Les problèmes spécifiques du Maroc," 12.

[686] This move was comparable to processes traced by Julie Livingston, Gabrielle Hecht, and others whereby the continued exclusion of Africans from imaginations of modernity—whether nuclear or public health related—has obscured the emergence of supposedly "first-world" risks and diseases on the continent. Gabrielle Hecht, *Being Nuclear: Africans and the Global Uranium Trade* (Cambridge, Mass.: MIT Press, 2012); Julie Livingston, *Improvising Medicine: An African Oncology Ward in an Emerging Cancer Epidemic* (Durham: Duke University

Beyond reproducing definitions of pollution that excluded Moroccans from full modernity, the postcolonial administration's list of environmental problems also reinforced Protectorate-era strategies for managing impoverished urban and rural communities. By identifying erosion, deforestation, and sanitation—processes that had been severely legislated by Protectorate officials—as the core environmental problems facing the nation, the CNDR effectively repackaged colonial conceptions about who was at risk and who was to blame for degradation. By declaring industrial pollution a non-issue, the Commission dismissed the possibility that the urban and rural poor could become victims of toxic exposure. Instead, villagers and slum dwellers were cast as the primary perpetrators of pollution. CNDR studies singled out farmers in the restive Rif and their practices of inclined agriculture on the mountainous slopes for contributing to erosion in a region still being punished by the central state for its uprising against the crown in the late 1950s.[687] The CNDR also envisioned an ambitious reforestation project— comprised mostly of eucalyptus trees—that bore a striking resemblance to colonial environmental interventions in Algeria and Morocco.[688] These eucalyptus, which tended to further desiccate already dry soils in Morocco, also served a disciplinary function. Tree planting aimed to "transform mentalities" and to "raise the population's awareness about the need to respect nature in general."[689] Discussions of water pollution in the kingdom, while they did not entirely ignore industrial factors, tended to focus on the public health risks of poor sanitation. Fears about a reemergence of typhus, typhoid, or cholera echoed Protectorate-era arguments that cast the bodies of the urban poor as sources of

Press, 2012).
[687] "Les travaux faits par la C.N.D.R. sur le problème de l'environnement: Les problèmes spécifiques du Maroc," 15.
[688] Diana K. Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonial Expansion in North Africa* (Athens: Ohio University Press, 2007), 169.
[689] "Les travaux faits par la C.N.D.R. sur le problème de l'environnement: Les problèmes spécifiques du Maroc," 16.

contamination rather than victims of disease.[690]

The CNDR report's conclusion made these points explicit:

> Rural poverty, urban poverty are the real great environmental problems that confront all developing countries….In the case of developing countries, development becomes essentially the remedy for their principle environmental problems….In the same spirit, it is essential to admit that it would be ineffectual in a country like Morocco to focus on problems of atmospheric pollution by combustion motors, first because the danger is still minimal, second and especially because such problems are becoming critical in wealthy countries and will inevitably be studied by them.[691]

Not only did the CNDR's planners cast industrial pollution as a non-issue, they harnessed assumptions about the essential difference of Morocco's environmental problems to argue for maintaining a global distribution of knowledge production rooted in the colonial order. For Moroccan experts and officials, constructing pollution as technical category was a matter of reproducing partial legibilities and zones of non-knowledge.[692] An internationally imagined division of technoscientific labor between rich and poor countries under-girded the visions of the environment promoted by French and Moroccan experts. Following the strategies of postcolonial elites in other contexts, Moroccan officials attempted to portray development and environmental protection as non-contradictory principles—a move that relied on rendering certain forms of risk invisible and unknowable.

The effects of the postcolonial government's calculated ignorance of risks related to industrial pollution were not merely discursive. For Moroccans living in close proximity to cement plants and other manufacturing centers, the erasure of certain categories of harm from

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[690] "Les travaux faits par la C.N.D.R. sur le problème de l'environnement: Les problèmes spécifiques du Maroc," 19.
[691] "Les travaux faits par la C.N.D.R. sur le problème de l'environnement: Les problèmes spécifiques du Maroc," 26-27.
[692] I follow Scott Frickel's suggestion here about the need to study the "non-production" of knowledge and the "institutionalization of environmental ignorance." Scott Frickel, "Missing New Orleans: Tracking Knowledge and Ignorance through an Urban Hazardscape," in *Histories of the Dustheap: Waste, Material Cultures, Social Justice*, ed. Stephanie Foote and Elizabeth Mazzolini (Cambridge, Mass.: MIT Press, 2012), 98.

policy discussions translated into new forms of exposure. During the 1970s for instance, the Lafarge cement plant lay practically at the center of Hay Mohammadi, the site of the former Carrières centrales and one of the largest working-class neighborhoods in Casablanca at the time. Since independence the neighborhood had remained a central site of urban protest, particularly during the 1965 uprising. One of the period's most notorious prisons, Derb Moulay Cherif, was also located in Hay Mohammadi not far from the cement plant. One former resident, Hamid Berghout, recounted how during the OPEC crisis the factory shifted from burning oil to burning coal to operate the cement kilns. He described how the entire neighborhood was rapidly coated in soot. It became impossible to sit outdoors in cafés—a prime space for masculine sociality—without being covered in a thick layer of black film.[693] Such experiences disrupt the accounts of urban planners who cast industrial pollution as a non-issue in Morocco.

In the absence of policies, techniques, and instruments for making atmospheric pollution visible, both experts and local residents who broached the subject had to rely on sensory perceptions and observational methods. One study published in *Maroc medical* in 1973 claimed that without a reliable means of measurement the general increase in atmospheric pollution in Casablanca, Agadir, and Safi could be tracked through changing weather patterns over the course of the past forty years. Taking 1931 as the start point and Essaouria—a city that had experienced virtually no industrial development—as a control, the technical assistant, Claude Calvet argued that the growing presence of fog in Morocco's coastal cities was a sign of an increasingly polluted environment. Agadir provided further evidence for this claim as the city witnessed a marked drop in the number of foggy days after the destruction of the industrial sector in the 1960 earthquake. Citing these variables, Calvet suggested that "urban atmospheric pollution is far

[693] Interview, Hamid Berghouth, May 2017.

from inexistent in Morocco."[694] Casablanca with its large number of industries and automobiles presented a particularly dangerous case.[695] Beyond such observations and comparisons, however, there were few means available to either urban experts or local residents for rendering environmental exposures legible.

Slums and "Environmental" Problems

Official discussions of pollution and environmental protection also reshaped debates about the desirability of different forms of urban construction in Morocco. The turn to the "local" as a potential solution to environmental degradation (the focus of the following section) provoked a subtle shift in the status of slums within models of urban development proposed by the Moroccan planners and European technical assistants who staffed the kingdom's ministries and municipal institutions. Postcolonial urban professionals in the late 1960s and early 1970s were not the first to regard *bidonvilles* as a resource to be tapped. The crisis technologies developed to deal with anti-colonial unrest in the final years of the Protectorate similarly sought to harness forms of skill, labor, and sociality associated with life in the slums while enacting forms of financial and technical surveillance to contain what appeared threatening [Chapter 3]. Unlike Protectorate urbanists, however, who continued to regard *bidonvilles* as a kind of aberration, an uncomfortable blend of modernity and tradition, some postcolonial planners sought to incorporate slums into their vision of development—a kind of "Moroccanized" modernization. New notions of "protection," "pollution," and "precarity" provided a framework for identifying precisely which elements of Morocco's urban environments represented forms of

[694] Claude Clavet, "La pollution atmosphérique urbaine sur le littoral atlantique marocain," *Maroc medical* 572 (October 1973), 575.
[695] Claude Clavet, "La pollution atmosphérique urbaine sur le littoral atlantique marocain," *Maroc medical* 572 (October 1973), 575.

risk and of value. Postcolonial planners also seized on these concepts to assess the afterlives of French urbanism in Morocco.

Bidonvilles or *mudun al-safīḥ*—slums or forms of informal and precarious housing—were at the center of these debates. Moroccan administrators continued to single out poor sanitation in *bidonvilles* as the primary source of contamination in the urban environment. In certain cases, officials went so far as to identify *mudun al-safīḥ* not just as a cause but as a form of "pollution."[696] The architect and urbanist, Jean Hensens critiqued this view, which he described as reducing the *bidonville* to a "profanation of another form of housing imagined as pure and clean, a visual and aesthetic intolerance."[697] A Belgian technical assistant, Hensens was initially recruited by Ben Embarek to the Moroccan Ministry of Public Works before joining the CERF. Inverting the formula, "bidonville = pollution," Hensens argued that *bidonvilles* represented an advanced form of "anti-pollution."[698] As a type of dwelling based on the re-purposing of industrial debris, Moroccan slums functioned simultaneously as mechanisms for recycling and for the production of cheap housing. In a report included in Colloquium based on the 1960 housing census, the Service central des statistiques (SCS), deployed similar arguments. The SCS suggested that rather than a profanation of existing urbanism, "the *bidonville* follows economic development as it is practiced in Morocco, it is part of the model of development."[699]

Other members of the CERF argued that the problems of substandard housing and of economic development more broadly had their origins in real estate speculation. Portraying

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[696] Jean Hensens, "Bidonvilles et pollution," in *Colloque national: Environnement et développement* (Rabat: Ministère de l'urbanisme, de l'habitat et de l'environnement, June 6, 1973) R2487, BMHPV, 1.
[697] Hensens, "Bidonvilles et pollution," 1.
[698] Hensens, "Bidonvilles et pollution," 2.
[699] In this model, forms of substandard housing resulted from both a rising cost of living and new expectations of comfort in a "'modernized' environment." Service central des statistiques, "Maroc-Bidonvilles," in *Colloque national: Environnement et développement* (Rabat: Ministère de l'urbanisme, de l'habitat et de l'environnement, June 6, 1973) R2492, BMHPV, 3.

Morocco as a liberal market economy, planners accused urban speculators of channeling the flow of capital away from more productive sectors such as industry.[700] As a result of speculation and rising prices in zones of Casablanca labeled for extension in the master plan, really existing urban construction had proceeded informally in prohibited areas, creating an inverted version of the plan.[701] At the same time, municipal construction codes that forbade the use of "traditional" construction methods led to the proliferation of cheap and unreliable cinder-block housing. Given this intractable situation, the CERF argued that the goal should be not to eliminate *bidonvilles* but rather to "bring them out of clandestinity, to arrange and utilize their dynamism for the greater good of the collectivity."[702] CERF planners envisioned regularizing the legal status of slums and standardizing the construction practices within them as a means of combating speculation.

The *bidonville*'s ambiguous status within new discussions of environmental policy in Morocco re-articulated—in the context of the postcolonial state's intensifying investment in urban security networks—colonial-era practices for approaching slums as both threat and resource. Whereas late colonial urbanists such as Pierre Mas had imagined *bidonvilles* as reservoirs of cultural dynamism, Hensens and other technical assistants working for the postcolonial state linked continuing forms of urban precarity to emerging notions of environmental and cultural appropriateness, a Moroccanized path toward modernization and development. In contrast with colonial planners, however, state experts in the early 1970s were far more concerned with standardizing and classifying forms of substandard housing. French and Moroccan architects and urbanists at the CERF suggested that the term "*bidonville*" applied to

[700] Centre d'expérimentation, des recherches et de formation, "Pour un urbanisme opérationnel," (Rabat: Ministère de l'intérieur, Direction de l'urbanisme et de l'habitat, 1968), 12.
[701] Centre d'expérimentation, des recherches et de formation, "Pour un urbanisme opérationnel," 12.
[702] Centre d'expérimentation, des recherches et de formation, "Pour un urbanisme opérationnel," 30.

"the totality of summary and precarious housing, judged as such by the local specialists of the D.U.H. (Direction de l'Urbanism et de l'Habitat)."[703] Such reasoned judgments on the part of "local specialists" were based not on the appearance of structures, but on expert evaluations of the materials and techniques used in their construction.

In the 1971 housing census, "precarity" was defined as a quality—inherent in certain forms of labor (the shoddy execution of a project), in inappropriate uses of construction technologies, or in certain types of matter.[704] Precarity was observable to the trained eye, but not all forms of precarity were created equal. Postcolonial planners classed various types of substandard housing in accordance with the differing degrees of danger and potential they presented. The housing census distinguished *bidonvilles* as an "effect of modernism" from what were identified as "traditional constructions" built of rammed earth or masonry.[705] When the latter appeared in urban areas, it represented "rural influences" rather than a distinctly urban form.[706] Different categories of housing were arranged according to greater and lesser degrees of precarity: with shacks, shanties, tents separated from dry stone, rammed earth, masonry, and the obligatory "other" category.[707] Organizing different types of substandard housing by their proximity to "modernity" or "tradition," by their urban or rural origins, and by their level of precarity were all means of separating what was threatening for state planners from what was potentially a source of value. While many members of the Ministry of Housing continued to regard slums as sites of pollution and urban disorder, institutions like the CERF turned toward

[703] Centre d'expérimentation, des recherches et de formation, "Habitat sommaire urbain," 1972 in *Colloque national: Environnement et développement* (Rabat: Ministère de l'urbanisme, de l'habitat et de l'environnement, June 6, 1973) R2492, BMHPV, 1.
[704] Service central des statistiques, "Maroc-bidonvilles: Resultats partiels du recensement 1971 de l'habitat" in *Colloque national: Environnement et développement* (Rabat: Ministère de l'urbanisme, de l'habitat et de l'environnement, June 6, 1973) R2492, BMHPV, 2.
[705] Service central des statistiques, "Maroc-bidonvilles: Resultats partiels du recensement 1971 de l'habitat," 3.
[706] Service central des statistiques, "Maroc-bidonvilles: Resultats partiels du recensement 1971 de l'habitat," 3.
[707] Service central des statistiques, "Maroc-bidonvilles: Resultats partiels du recensement 1971 de l'habitat," 4.

classifying and systematizing aspects of informal building that could be of use for an environmentally informed national housing policy. In the vision of development promoted by the CERF, even materials such as rammed earth or reeds—if properly standardized—had a role to play the construction of low-cost housing.[708]

LOGEMENTS URBAINS 1971
APPROCHE NORMATIVE DE L'HABITAT (Selon nature du logement)
(Résultats préliminaires du recensement de l'habitat 1971)

Découpage administratife Provinces et Préfectures.	1) SOUS NORMATIF EVIDENT					2) SOUS NORMATIF PARTIEL					3) NORMATIF PROBABLE		TOTAL DES LOGEMENTS
	baraques.	Noualas	Tentes	Total	%	Pierre Sèche	Pisé	Autres	Total	%	Maçonnerie.	%	
AGADIR	4.350	50	110	4.510	12,7	1910	10.840	40	12.790	34,-	20.390	54,-	37.690
AL HOCEIMA	93	3	3	99	2,3	124	383	7	514	12,-	3.660	85,7	4.273
BENI MELLAL	980	480	480	1.500	6,1	1380	7.990	90	9.460	38,2	13.800	55,7	24.760
EL JADIDA	550	100	10	660	3,4	280	1.310	0	1.590	8,-	17.580	88,6	19.830
FEZ	1.180	1650	0	2.830	3,5	3920	5.900	1890	11.710	14,4	66.950	82,1	81.490
KENITRA	13.000	550	70	13.620	20,8	5240	5.680	140	11.060	16,8	41.050	62,4	65.730
KHOURIBGA	4.730	80	10	4.820	17,5	400	70	40	510	1,9	22.180	80,6	27.510
KSAR-ES-SOUK	26	5	3	34	0,9	116	6.367	14	6.497	75,-	2.137	24,6	8.668
MARRAKECH	250	140	30	420	0,5	4550	51.150	50	55.750	70,5	22.870	29,-	79.040
MEKNES	7.590	1930	80	9.600	12,7	3990	10.160	110	14.260	18,9	51,430	68,4	75.290
NADOR	47	28	2	77	1,-	1010	575	6	1.591	19,8	6.387	79,2	8.055
OUARZAZATE	19	11	0	30	0,6	191	4.091	4	4.286	79,1	1.099	20,3	5.415
OUJDA	760	170	1190	2.120	3,3	3840	9.380	40	13.260	20,8	48,170	75,9	63.550
SAFI	150	60	0	210	0,5	2980	1.020	30	4.030	9,4	38.750	90,1	42.990
SETTAT	3.670	1110	0	4.780	22,-	560	560	0	1.120	5,2	15.780	72,8	21.680
TANGER	6.340	0	0	6.340	15,-	1390	150	30	1.570	3,7	34.370	81,3	42.280
TARFAYA	25	95	30	150	6,3	26	123	5	154	6,5	2.081	87,2	2.385
TAZA	360	50	10	920	6,7	1430	4.000	260	5.690	41,6	7.070	51,7	13.680
TETOUAN	5.610	400	10	6.020	10,1	2120	1.560	10	3.690	6,2	50.320	83,7	60.030
CASABLANCA	40.500	160	30	40.690	12,7	5200	1.390	380	6.970	2,2	268.850	85,1	316.510
RABAT/SALE	20.250	470	1250	21.970	19,5	2010	3.770	200	5.980	5,3	84.580	75,2	112.530
M A R O C	110.980	7542	2878	121.400		42667	126.449	3346	172.462		819.504		1.113.386
%	10,-	0,7	0,2		10,9	3,8	11,4	0,3		15,5		73,6	100

Figure 23: Service central des statistiques, "Maroc-Bidonvilles," in *Colloque national: Environnement et développement* (Rabat: Ministère de l'urbanisme, de l'habitat et de l'environnement, June 6, 1973) R2492, BMHPV.

Environmental framings of Morocco's urban problems also extended the politics and practices of risk management developed during Agadir's rebuilding to other urban settings [Chapter 4]. At the 1975 National Environmental Colloquium, Mohamed Daoudi, an engineer with the Ministry of Urbansim, suggested that taking measures to secure the construction process

[708] Centre d'expérimentation, des recherches et de formation, "Pour un urbanisme opérationnel," 35.

was essential for ensuring urban security in general.[709] Reflecting on the legacies of Écochard's policy of "housing for the greatest possible number," Daoudi argued that it was no longer enough simply to build cheaply and rapidly.[710] Instead state planners and private investors must take various forms of risk into account to create a resilient and reliable urban environment. Daoudi acknowledged that engineers in most contexts continued to rely on French norms for structural calculations while Agadir alone had adopted construction codes designed with Morocco's distinct environmental conditions in mind. He envisioned new institutions for developing and enforcing construction codes at a national level. Even this call for national standards could be cast as a kind of return to the "local," a form of decolonization, a departure from French norms. More broadly, Daoudi's suggestion—though not enacted until decades later—represented yet another way of deploying the notion of the "environment" to reframe preexisting urban problems as *risks*.

In the early 1970s, the introduction of environmental pollution as a new "matter of concern" for urban policy dovetailed with a renewed interest in "rural" and "traditional" forms of housing as well as in the potentially valuable features of urban slums.[711] At the same time, this revalorization of "tradition" as a resource for development was accompanied by a revaluation of colonial urbanism. In a 1972 essay, Hensens argued that environmental protection was fundamentally a question of social cohesion. The difficulties of containing pollution or of instilling a sense of civic responsibility in a country like Morocco stemmed not from an innate

[709] Mohamed Daoudi, "De la sécurité de la construction," in *Comité national de l'environnement : 3ème Colloque national* (Rabat: Ministère de l'urbanisme, de l'habitat, du tourisme et de l'environnement, 1975), 558PO/1/188, CADN, 4.
[710] Mohamed Daoudi, "De la sécurité de la construction," 3.
[711] I use Bruno Latour's notion of a "matter of concern" here to suggest that the "environment" in question for postcolonial experts and officials was not a unified and indisputable entity nor an immaterial discursive projection, but rather a collection of multiple arguments, materials, and techniques—some of which continued to be called into question (i.e. industrial pollution). Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2005), 114-115.

lack but from the experience of colonialism.[712] By disrupting local social structures and introducing an extractive "Western ideology of colonization," the French Protectorate, including Protectorate urbanists, had weakened the pull of local environmental practices and modes of conservation.[713] According to Hensens, the solution to this dilemma—"the recalibration of the relationship between nature and society that will bring an end to [these] skillfully orchestrated environmental psychoses"—resided in the regeneration of local, communal structures and practices.[714] Formerly colonized people, for Hensens, had to assert both their "collective knowledges and technical capacity" alongside the "right to their own culture."[715] In this vision, local construction practices—including, in some cases, the same *bidonvilles* identified elsewhere as a source of pollution—constituted a means of environmental protection and even a path to decolonization.

Reports produced by the CERF, the CNDR, and the various environmental colloquia during the late 1960s and early 1970s reveal the intersection of two processes within planning circles in Morocco. On the one hand, the recognition that slums—regardless of the socio-economic conditions that produced them—represented not just a consequence but potentially a vehicle for development as conceived by high officials within the postcolonial state. On the other, the recasting of problems previously associated with slums as "environmental problems." The following section will examine in more detail how these two trends drew upon new visions of rurality, as urban professionals and technical assistants sought solutions to Morocco's urban crisis in the very forms of precarity identified as its symptoms.

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[712] Jean Hensens, "La structure sociale comme élément pour la protection de l'environnement humain," in *Colloque national: Environnement et développement* (Rabat: Ministère de l'urbanisme, de l'habitat et de l'environnement, June 6, 1973) R2487, BMHPV, 1.
[713] Hensens, "La structure sociale comme élément pour la protection de l'environnement humain," 1.
[714] Hensens, "La structure sociale comme élément pour la protection de l'environnement humain," 3.
[715] Hensens, "La structure sociale comme élément pour la protection de l'environnement humain," 3.

Remaking Local Knowledge and Expert Authority at the CERF

While discussions of environmental problems in the 1970s reinvigorated Protectorate-era framings of urban problems and colonial knowledge hierarchies, they were also informed by a set of debates about the materiality of construction work in Morocco that had been brewing since the late 1960s. The renewed interest in local and especially rural forms of dwelling—institutionally enshrined in the CERF—intersected with official arguments about environmental protection.[716] Founded on August 8, 1968 within the Ministry of the Interior, the Centre d'Expérimentation, des Recherches et de Formation (CERF) sought to categorize and systematize local knowledge about construction in Morocco on a grand scale.[717] The Moroccan engineers, planners, and architects who staffed the CERF along with European technical assistants claimed a mandate to study, improve, and disseminate information about low-cost building technologies in the country.[718] The center's efforts to mobilize "tradition" for the purposes of development paralleled attempts during the "years of lead" to reinvigorate the political symbols of the monarchy while extending state networks of surveillance and security. As CERF architects and planners worked to capture and operationalize local, rural approaches to construction, they highlighted certain gendered forms of technological labor and marginalized others. While acknowledging the skill of Moroccan craftsmen when it came to building, the CERF crafted a definition of "local knowledge" that excluded practices of repair and

[716] Centre d'expérimentation, des recherches et de formation, "Habitat rural traditionnel du sud Maroc," Ministère de l'intérieur, Direction de l'urbanisme et de l'habitat, 1972, R2490, BMHPV, 1.
[717] Mohamed Naciri has discussed this the turn toward rural areas in the country's urban policies Mohamed Naciri, "Politiques urbaines et 'politiques' de l'habitat au Maroc: Incertitudes d'une stratégie," in *Politiques urbaines dans le monde arabe*, ed. François Métral and Georges Mutin (Lyon: Maison de l'Orient, 1990), 71-99. See also Pascale Philifert, "Urban Planning in Morocco: Historical Legacy, Approaches to Urban Policies, and Changes in Urban Planners' Roles and Practices, 1960–2010," in *Urban Planning in North Africa*, ed. Carlos Nunes Silva (New York: Routledge, 2016), 57-70.
[718] "Note sur les fonctions du 'Service de documentation' de la Direction de l'urbanisme et de l'habitat" (Rabat: Centre d'expérimentation, des recherches et de formation, 1969), 1.

maintenance responsible for rendering the rural built environment habitable.

The revalorization of local construction expertise during this period represented a fundamental shift in the way experts imagined the categories of the urban and the rural in relation to one another. In essence, the rural went from being the root of urban problems (i.e., references to *slums* as rural forms, the importation of incompatible modes of life from the *bled*) to being the *solution*—an injection of rural values into a degraded postcolonial city. The European and Moroccan professionals who staffed the center dubbed themselves "ruralists" rather than "urbanists"—giving pride of place to the countryside as a source of knowledge for postcolonial development.[719] At the same time, the CERF adapted a strategy that had been proposed but never fully implemented by the Protectorate's housing administration. By studying and improving rural housing, the center's planners aimed to "root populations in the countryside and thus discourage the rural exodus."[720]

Members of the CERF positioned themselves as arbiters of local knowledge in two respects. Unlike their Protectorate predecessors who sought to harness the skill and labor of Moroccan craftsmen by enrolling them into construction cooperatives, CERF planners aimed to systematize, regulate, and adapt "traditional methods and materials" to the conditions of urban expansion.[721] At the same time, the center echoed late colonial anxieties about how urban residents would make use of technologies like cinder blocks and sheet metal, and advised the Ministry of Housing on how and where to implement "new," low-cost techniques and materials.[722] French architects like Bernard Hamburger and Gérard Bauer presented designs for

[719] Gérard Bauer and Bernard Hamburger, "Précis de ruralisme" (Rabat: Centre d'expérimentation, des recherches et de formation, 1968), 6-7.
[720] Centre d'expérimentation, des recherches et de formation, "Pour un urbanisme opérationnel," 4.
[721] Centre d'expérimentation, des recherches et de formation, "Moyen d'actions dans le milieu urbain" (Rabat: Ministère de l'intérieur, Direction de l'urbanisme et de l'habitat, 1968), R67, BMHPV, 5.
[722] Centre d'expérimentation, des recherches et de formation, "Moyen d'actions dans le milieu urbain," 5.

"new villages" to be built by cooperatives on the urbanized Atlantic coast along with "experimental" structures that blended rammed-earth, concrete, and prefabricated elements.[723]

Figure 24: New Village of Ellouizi (Mohammedia), DAU 10 133 Ifa, AAXXS.

Beginning in the late 1960s, foreign and Moroccan members of the CERF became involved in a series of rural development projects, initiated in part with an eye to shoring up support for the monarchy in the countryside following urban unrest in Casablanca and elsewhere. One prototypical initiative, The Draa Valley Housing Renovation Project was conceived in 1968 as part of the Ministry of the Interior's five-year rural development plan with the support of the World Food Program. In broad terms, the project aimed to preserve, repair, and if necessary demolish housing in a series of southern *quṣūr* as the first step in a process of rural

[723] Bernard Hamburger, "Ellouizi, nouveau village," Atelier de recherche et d'études d'aménagement, 1968, DAU 10 133 Ifa, AAXXS; Bernard Hamburger and Gérard Bauer, "Étude et réalisation de constructions expérimentales," Atelier de recherche et d'études d'aménagement, 1968, DAU 10 133 Ifa, AAXXS.

modernization.[724] The initial study was carried out between November and December of 1967 by a group of technical assistants including Jean Hensens as well as a local urbanist from Marrakesh and a technical adjunct from the Ouarzazate province. In addition to Hensens, another Belgian architect Jean Dethier as well as Bauer and Hamburger, composed the final report. The Draa Renovation project was an exemplar of "ruralism"—an attempt to describe, systematize, and eventually transform local constructions practices in agrarian communities still responding to the shock of the rural exodus and the arrival of new construction technologies.

Settlements in the Draa River Valley, an arid agricultural region to the south of the Atlas mountains, had long depended upon a series of carefully regulated local irrigation systems to supply water for date and grain cultivation. The CERF described the Draa as socially complex—a region populated by "Arabs, Berbers, and Blacks (Harratines)" as well as both sedentary and nomadic groups.[725] A network of small, Amazigh villages along the river and near oases, all approximately the same size, developed a distinctive style of earthen architecture. The majority of these villages, known as *quṣūr* (sing. *qṣar*), had been densely populated and surrounded by defensive walls and fortifications—features the CERF architects described as remnants of an era of "inter-tribal warfare."[726] The report's authors read the tightly packed multi-story houses, narrow alleys, and "quasi 'subterranean'" streets of the *qṣar* as forms of environmental adaptation—means of assuring shade and ventilation in an inhospitable climate.[727] According to

[724] Direction de l'urbanisme et de l'habitat, "Renovation de l'habitat dans la Vallée du Draa" (Rabat: Centre d'expérimentation, des recherches et de formation, 1968), R64, BMHPV.
[725] Direction de l'urbanisme et de l'habitat, "Renovation de l'habitat dans la Vallée du Draa" (Centre d'expérimentation, des recherches et de formation, 1968), R64, BMHPV, 7; The place of the Draa's Harratin inhabitants, there social position and role in the labor systems involved in construction work is largely unrepresented. For a historical discussion of race, blackness, the position of the Harratin, and slavery see Chouki El Hamel, *Black Morocco: A History of Slavery, Race, and Islam* (Cambridge; New York: Cambridge University Press, 2013).
[726] "Renovation de l'habitat dans la Vallée du Draa," 9.
[727] "Renovation de l'habitat dans la Vallée du Draa," 9.

Hensens's team while the environmental functions of this architecture remained relevant, the social conditions that gave birth to this built form had largely disappeared. The end of regional warfare, the demographic expansion of the region, and large-scale labor migrations to other parts of Morocco had not only disrupted village socialities but also led to the deterioration of the built environment. For the CERF, revitalizing the seemingly degraded landscape of Draa Valley villages involved conceptually separating noxious modern influences from traditional knowledges—extricating authentic, local methods from the social and economic conditions of postcolonial Morocco and restoring their status as environmentally appropriate practices.

To calculate the renovation project's cost and prioritize renovations, CERF planners elaborated a system of classification—dividing rural houses according to degrees of "repairablity." They designated homes in the *quṣūr* as either "new or well maintained", "to be protected," "irreparable but inhabited", or "ruins."[728] These categories—based on expert evaluations of a building's stability and appearance—were accompanied by sociological explanations of how structures arrived at their present state. A well-maintained *qṣar* indicated a community's affluence; a weathered but inhabited *qṣar* signaled an oasis economy fallen on hard times. Ruins represented troubling manifestations of the rural exodus, homes abandoned by migrants seeking work in Moroccan cities. Degraded buildings with absentee owners created technical, aesthetic, and juridical problems for the project's planners. They therefore sought to create legal mechanisms through which local *jamaʿat* could take possession of these ruined properties, in spite of the resistance of migrants who typically asserted claims of ownership to both the structures and the plots themselves.[729]

The CERF study's members brought with them a vision of construction work as a

[728] "Renovation de l'habitat dans la Vallée du Draa," 25.
[729] "Renovation de l'habitat dans la Vallée du Draa," 27.

hierarchical process—with sharp divisions between intellectual and manual labor. The forms of work-site organization they encountered, however, frequently clashed with this vision. The figure of the *muʿallim*—understood here as a specialist in traditional construction methods—occupied a central position in the Draa Valley Housing Renovation Project. The *muʿallim* performed a dual function for the project's planners. He (see discussions of gender below) was at once a reliable demi-expert, a guarantor of the technical efficacy and cost effectiveness, and a potentially unruly form of labor, an artisan whose skills varied and whose work depended on local environmental conditions and seasonal rhythms. Moreover, the position of *muʿallimūn*—their degree of embeddedness within local communities—had supposedly shifted with the introduction of a money economy in the Draa.[730] As currency replaced forms of payment in kind, cash-strapped families in the region had less recourse to the technical skills of *muʿallimūn.* One result, the CERF noted, was the generalized deterioration of the built environment—a sign that traditional knowledge itself had begun to lapse under pressure from the economic changes sweeping the Moroccan countryside.[731]

In the *qṣar, muʿallimūn* were responsible for overseeing the organization of the construction site, directing "non-specialist" laborers as well as local women who brought in the quantities of water necessary for mixing earthen bricks. They also performed the technical labor of producing the earthen blocks that were the base material in housing construction using specialized wooden formwork known as *taboutes.* The compacting and drying of these blocks, which involved minute evaluations of the time and pressure required given the humidity, temperature, and season, represented the most delicate technical operation of the traditional

[730] "Renovation de l'habitat dans la Vallée du Draa," 10.
[731] Hensens was concerned not only with the degradation of the physical structures themselves but also with the supposed decline of the techniques and knowledges. Jean Hensens, "Habitat rural traditionnel des oasis présahariennes: Le qsar – problèmes de rénovation," *Paideuma* 18 (1972), 58.

construction process.[732] This system had permitted what Hensens described as a historically elevated degree of technological sophistication and standardization for earthen architecture.[733] Enamored with this process and the forms of dwelling it enabled in a hostile desert environment, the report's authors noted that "earthen houses generate a remarkable level of thermal comfort that *no simple, modern technique* can rival."[734] They were quick to assert that when degradation did set in, it was the result of sociological conditions—the introduction of the money economy, the rural exodus, overpopulation in the remaining *quṣūr* —rather than any flaw in the "conception" of "traditional housing."[735] The immediate cause of structural breakdown in the Draa, however, was generally the brief, rapid, and violent rains that threatened to erode earthen houses. The need for regular, seasonal repair and maintenance was literally built into the material form of the *quṣūr* —a point the CERF architects acknowledge while still downplaying these forms of labor at the expense of the initial construction.

The maleness of the *muʿallim,* indeed of all construction work in the Draa, was not lost on the project's planners who remarked on the strict gendered division of labor in the *quṣūr*. While women participated in the construction process by bringing water to the work site, a fact acknowledged but quickly glossed over by the CERF, they were also typically responsible for the day-to-day, maintenance of rammed-earth households. In spite of the report's emphasis on maintenance as the core problem of renovation in the Draa, its authors systematically emphasized the one-time expenditures of building at the expense of daily upkeep. Marginalizing maintenance was not only a way of rendering the gendered labor of reproducing the *qṣar* invisible, it also removed the most compelling argument against rammed-earth earth housing

[732] "Renovation de l'habitat dans la Vallée du Draa," 14.
[733] Hensens, 51.
[734] Emphasis added. "Renovation de l'habitat dans la Vallée du Draa," 19.
[735] "Renovation de l'habitat dans la Vallée du Draa," 19.

from the equation. Calculations of the cost of the renovation project—while they included the initial repairs to damaged structures—made no provisions for daily upkeep. The labor of demolition, while referenced numerous times in the report was also written out of the final budgetary calculations with a note stating that "the work of dismantling [ruins] costs nothing in cash."[736]

The gendered division of construction labor did not necessarily hold at all times everywhere in Morocco. Lahsen Roussafi recounted, for instance, how his mother built their family home in the Ichache neighborhood of Agadir. Acting as the "head of the family" after the death of his father, Roussafi described his mother as a skilled mason who mixed and dried the earthen bricks used to construct their Icache dwelling. Only when the structure was nearly completed and it was time to add the roof did she request help from a group of male neighbors.[737] That the technological labor of earthen construction could fall to women or to wider communities was a fact that might have troubled the CERF's vision of the *muʿallim* as essentially their analog—an autonomous, male expert of traditional architecture.

The erasure of forms of labor that failed to fit this narrow definition of expertise undergirded the entire "ruralist" project—permitting a particular vision of postcolonial development and modernization to take root within various branches of the Moroccan bureaucracy. Systematically downplaying the problems of rural housing—the arduous, gendered labor of maintenance—or attributing them solely to the noxious influences of modernity was a way of continuing to overlook the gap between acceptable and desirable forms of life for Moroccan residents in the Draa and elsewhere. CERF planners were wary of the spread of "modern" low-cost construction technologies into rural areas. Cinder-block constructions, for all of their

[736] "Renovation de l'habitat dans la Vallée du Draa," 32.
[737] Lahcen Roussafi, Interview, August 15, 2017.

supposed lack of climatic suitability and cultural appropriateness, however, enabled forms of rural life—higher elevations and less daily upkeep—that many inhabitants of the Draa Valley found appealing. [738]

To counter the supposedly inappropriate use of new construction methods, the CERF encouraged the Ministry of Housing to exercise more direct control over rural construction while celebrating the built forms local inhabitants had created in the absence of standardized materials. They acknowledged that residents of the Draa or the Middle Atlas built homes "that were cheaper and better adapted to local conditions than any technical unit could," while simultaneously asserting that experts and state officials should to act as intermediaries, protecting and reforming the traditional construction process. Engineers or architects from the Ministry were to give "practical advice on how to improve, if necessary, the conception and the comfort of new houses."[739] This focus on improving the forms of life and comfort possible in earthen housing did not always extend to the construction of new infrastructures. Though the rural development projects of the 1960s and 1970s included some plans for provisioning running water to individual homes, electrical connections were exclusively for public lighting, not personal consumption, and sanitation "would be limited in most cases to the digging of dry wells."[740]

In addition to rural housing in agricultural communities, the CERF also created typologies to describe the forms of "mobile housing" prevalent among Morocco's pastoral and nomadic groups. A 1970 report noted that while "there is no modern version of mobile traditional

[738] The arguments of CERF members here resonated with earlier work by planners in the postwar Protectorate who had suggested that urban migrants to Casablanca remain content with whatever forms of "traditional housing" they were able to quickly erect.
[739] Centre d'expérimentation, des recherches et de formation, "Enquête sur la technologie de l'habitat rural en Basse Moulouya" (Rabat: Direction de l'urbanisme et de l'habitat, 1968), R66, BMHPV, 9; 19.
[740] "Enquête sur la technologie de l'habitat rural en Basse Moulouya," 9.

housing in Morocco. One could imagine it in the form of a ranch, with towable modern homes that can be disassembled, etc.…"[741] Alongside the different forms of "archaic" housing built using traditional materials—whose quality, according to CERF researchers, diminished with the deteriorating socio-economic conditions and technical skills of nomadic and pastoral communities—the report identified a new and more troubling phenomenon, "the rural-*bidonville.*"[742] Unlike the sometimes precarious forms of "traditional housing," the "rural-*bidonville"* resulted from "new socio-economic relations and new [construction] materials and techniques."[743] The report's authors went to great lengths to emphasize the "modern" nature of this "paradoxical situation," which afflicted rural zones that in colonial times had been known as "le Maroc Utile": "the hinterlands of the coastal economic axis running from Tangier to Safi, stretching across the Taza corridor to the east, briefly touching the phosphate-rich plateau of the Tadla, the pre-Rif and the Sais, covering the Chaouia and the Gharb."[744]

Beyond classifying types of rural housing, one of the CERF's central missions was to categorize and investigate the different types of construction materials deployed by local specialists. This involved collecting material samples from across the kingdom and shipping them back to the Laboratoire Public d'Essais et d'Études (LPEE) in Casablanca for detailed analysis. Gathered from quarries near Aïn Regada and Saïdia, samples of yellow and red *maaden*—a type of soil that local masons used to mix primer—were submitted to laboratory tests.[745] A locally abundant material in the Moulouya River Basin, *maaden* served as an "easier to use and more resistant" alternative to whitewash for local masons.[746] In this region, *maaden*

[741] Centre d'expérimentation, des recherches et de formation, "Extrait de l'enquête nationale sur l'habitat rural traditionnel au Maroc," Summer 1970, BNF, FOL-O3W-227 (7), 1.
[742] "Extrait de l'enquête nationale sur l'habitat rural traditionnel au Maroc," 3.
[743] "Extrait de l'enquête nationale sur l'habitat rural traditionnel au Maroc," 3.
[744] "Extrait de l'enquête nationale sur l'habitat rural traditionnel au Maroc," 3.
[745] "Enquête sur la technologie de l'habitat rural en Basse Moulouya," 2.
[746] "Enquête sur la technologie de l'habitat rural en Basse Moulouya," 2.

was also the base component in earthen blocks known as *toubia.* CERF planners marveled at the thermal resistance of walls built using *toubia* while voicing discomfort about the spread of reinforced concrete construction in nearby areas. Describing "traditional" housing in Lower Moulouya, the CERF noted that:

> Thermal comfort is fulfilled here, a fact that can be appreciated by an immediate comparison with Chouyaya. Within new housing projects in this adjacent area, a portion of the rooms are built using an architectural plan and are covered with reinforced concrete slabs, another portion of the rooms are built by the beneficiaries themselves using traditional methods. The users [inhabitants] claim that they cannot live in the "modern" rooms during the summer while the other [rooms] provide good protection [against the heat].[747]

In this reading, hybrid houses—half concrete, half earthen architecture—appeared to prove the superiority of "traditional" techniques to "modern" methods. Other readings are possible, however. The recourse to concrete construction and housing typologies approved by the Ministry of Housing also represented a means for rural residents to access public resources. Concrete in the countryside signaled participation in the modernizing projects of the central state while earthen additions embedded rural homes within local economies of construction—economies that were fundamentally shaped by migration and rural development projects like those studied by the CERF. Still, CERF members attempted to reassert sharp lines between modernity and tradition by tying each to particular technologies and values.

Planning communities in Morocco today repeat stories of local residents seasonally shifting between concrete and earthen housing. Abdelilah Laslami, an ex-director of the Agence Urbaine in Agadir provided one example of this trope:

> To be modern is to build with modern materials. Moreover, we see this…in Ouarzazate. The disfigurement of the urban landscape by those who work abroad [and send back remittances], because it [building with modern materials] is a way of expressing material

[747] "Enquête sur la technologie de l'habitat rural en Basse Moulouya," 6.

and economic as well as intellectual success. “I build with bricks and concrete slabs.” And when the weather becomes too hot, he is going to go to his grandfather’s house.[748]

The figure of the successful migrant, sending back remittance payments to build climatically inappropriate “modern” housing in the *bled*—this image is reproduced in literature and popular culture as well as among former urbantists. Moving between the unlivable concrete home and the undesirable traditional dwelling—this figure expresses something of the gap between expectations of decolonization—development with dignity—and its reality.

The CERF’s fascination with local construction materials ran parallel to a growing interest within Morocco’s Geological Service in locally available forms of sand, clay, and various minerals that could be used in the production of cement, bricks, and other construction materials.[749] At the country’s third National Environmental Colloquium, two geologists, Nataf and Hilali, summarized years of research into the presence of valuable minerals in Morocco. Their study portrayed a complex cartography of material mastery—identifying relevant resources for the production of specifically Moroccan forms of cement or ceramics. Once again, the LPEE was instrumental in testing locally available sources of gypsum or pozzolan to determine their particularities and industrial applications.[750] The geological project of mapping Morocco’s mineral resources complimented the CERF’s sociological mission of classifying its technological and architectural resources. Both involved crafting cartographies of value that could tapped at a national level by state and corporate actors.

I am not suggesting that the European technical assistants and low-level Moroccan officials who staffed the CERF somehow “misread” social, political, and environmental relations

[748] Interview, Abdelilah Laslami, August 14, 2017.
[749] E.A. Hilali and M. Nataf, "Recherches et études des matières premièrs minérales dans la domaine de la construction," in *Comité national de l’environnement : 3ème Colloque national* (Rabat: Ministère de l’urbanisme, de l’habitat, du tourisme et de l’environnement, 1975), 558PO/1/188, CADN.
[750] Hilali and Nataf, 10.

in the Draa Valley or the Moulouya River Basin.[751] Rather they enshrined earthen construction as "local knowledge" while simultaneously remaking the technologies, institutions, actors, and infrastructures upon which such "local knowledge" depended. Labeling practices as "traditional" or "local" was not simply a discursive act, but a process of inscribing them within institutional and infrastructural networks—networks that in Morocco of the 1960s and 1970s continued to revolve around logics of perpetual crisis and enhanced security. The juxtaposition of modernity and tradition was of course not unique to the CERF studies of this period. Their novelty lay in the way that debates about the relative value of modernity or tradition became entwined with the new sociotechnical concept of "the environment." This concept enabled the CERF to elevate the *muʿallim* as a master of environmentally appropriate technology, to recast the role of the expert as a shield against the dangerous influences of modernity rather than an avatar of modernization, and to systematically overlook calls for greater infrastructural attachment, higher elevations, and less labor intensive forms maintenance. In other words, "the environment" was the vehicle for reproducing colonial austerity within postcolonial approaches to what would eventually come to be known as sustainable development.

Environmental Absences

Expert and official efforts to repackage colonial conceptions of urban crisis under the heading of "environmental problems" such as pollution had an uneven impact when applied on the ground. Rural renovation programs may have held up local architecture as an antidote to the dangers of modernization, but this did little to halt the spread of concrete construction in the

[751] In other words, this is not an argument about the colonial or postcolonial misrecognition of local social and environmental practices. For an example of a "misrecognition" arguement see James Fairhead and Melissa Leach, *The Making and Misreading of an African Landscape: Society and Ecology in the Forest-Savanna Mosaic* (Cambridge; New York: Cambridge University Press, 1996).

countryside. While references to the environment became *de rigeur* among high officials in Morocco, few tangible policies coalesced for the protection of urban green spaces or municipal water sources.[752] Calls for *al-muḥāfaẓa ʿalā al-bīʾa* did, however, bolster legal mechanisms that allowed the Ministry of Housing to more rapidly expropriate land on the urban periphery without waiting for courts to set the cost of indemnification.[753] In spite of emerging arguments within institutions like the CERF that local knowledge and materials if properly managed and regulated could provide an alternative path for urban development, most studies of regional architecture were, in Laslami's words, "consigned to the closet."[754] Instead, Zemmouri's ministry adopted a series of urban plans that continued to rely on crisis technologies to remake urban environments.

As official focus shifted from rural areas back to Morocco's urban crisis in 1973, city's like Casablanca and Rabat witnessed a relaunch of the *lot économique,* as the primary financial mechanism for replacing slums with minimum housing and transforming slum dwellers into indebted homeowners [Chapter 3].[755] Zemmouri's ministry promoted various types of housing cooperatives including the Castor model [Chapter 3]—still referred to as "new approach" in the early 1970s—as a means of harnessing the labor and skills of displaced residents.[756] One innovation to the Castor model involved the production of a simplified construction manual "based on the practical knowledge commonly held by all squatters."[757] Such manuals would

[752] Laslami suggested that among planners and architects in Morocco environmental considerations were absent not only in practice but even at the level of the conception of their projects. Interview, Abdelilah Laslami, LaSlami, August 14, 2017.
[753] "Recommendations," in *Comité national de l'environnement : 3ème Colloque national* (Rabat: Ministère de l'urbanisme, de l'habitat, du tourisme et de l'environnement, 1975), 558PO/1/188, CADN.
[754] Interview, Abdelilah Laslami, August 14, 2017.
[755] "M. Hassan Zemmouri procède à la distribution de lotissements économiques," *Le matin*, November 12, 1972. [no page number]; On this shifting emphasis toward cities see Pascale Philifert, "Urban Planning in Morocco: Historical Legacy, Approaches to Urban Policies, and Changes in Urban Planners' Roles and Practices, 1960–2010," in *Urban Planning in North Africa*, ed. Carlos Nunes Silva (New York: Routledge, 2016), 59.
[756] "Pour une nouvelle approche des problèmes de l'habitat," *Maghreb information*, August 30, 1972, 558PO/1/188, CADN [no page number].
[757] "Pour une nouvelle approche des problèmes de l'habitat," [no page number].

presumably be prepared by housing officials with experience cataloging forms of slum housing—experts like those at the CERF who could separate "low-cost solutions" from dangerous technical shortcuts. Another method involved the distribution of prefabricated housing kits, which cooperative members could assemble with the aid of another manual and "under a certain [amount] of technical surveillance."[758] Prefabrication with its promises of regularity and speed, continued to occupy a central place in the urban imaginaries of postcolonial planners. While turning to the investigation of local construction practices, Zemmouri also dispatched delegations abroad to Germany and Italy to study the use of prefabricated methods internationally.

The fact that these responses to Morocco's continuing urban crisis resembled planning strategies pioneered under the Protectorate was not lost on observers. As a 1973 article from *Maghreb Information* argued:

> The housing crisis has reached two thirds of the urban population who are compelled to devote two thirds of their budget to rent….Here as elsewhere the colonial legacy has not only remained in place but "developed," our cities remain divided between *madina, ville nouvelle*, and *bidonville*, each sector with its own way of life. Segregation, which continues to be cultivated, in no way restricts speculation in "clandestine housing developments" which on the contrary expand endlessly….[759]

"Segregation," however, was not the only persistent colonial legacy in Moroccan cities. Debates in the 1970s over the problems and solutions to continuing crisis reproduced the same oppositions and compromises as those in the tumultuous final years of the Protectorate. Tensions between local and transferable knowledge, between harnessing value and containing vulnerability, continued to play out in housing policies that targeted the urban poor. On the one hand, the presumed links between *bidonvilles* and environmental pollution provided a new set of

[758] "Pour une nouvelle approche des problèmes de l'habitat," [no page number].
[759] "L'héritage colonial en matière d'habitat maintenu," *Maghreb information*, May 8, 1973, 558PO/1/188, CADN.

arguments in favor of outright slum clearance, at a time during the years of lead when urban disorder had once again become a central administrative anxiety. On the other, the suggestion that slums represented forms of anti-pollution could justify the deferral of infrastructural connections and other public resources to Morocco's *bidonvilles*. Urban experts positioned themselves as enlightened intermediaries equipped to navigate these two seemingly contradictory approaches—whose role was not to transform the urban order, but to evaluate and separate security threats from sources of value.

On the surface, official interest in the "environment" did not provoke major policy shifts in Morocco. Instead, environmental logics and languages produced new arrangements of authority—foreclosing certain categories of harm in favor of others, reanimating colonial debates about the potential profitability of the "local," and offering another avenue for assessing the afterlives of Protectorate urbanism. All this, as state security networks began to tighten and proponents of more radical forms of decolonization found themselves "disappeared" or imprisoned. The project of environmental conservation was from the start subordinated to and blended with the imperatives of urban surveillance.[760]

Conclusion

During the 1970s, expert and official arguments about "environmental problems" provided opportunities for new practical and discursive approaches to Morocco's urban crisis—articulations of crisis that re-inscribed and in some cases extended colonial definitions of who and what was vulnerable and valuable. Attempts to harness and regulate rural construction

[760] The link between technical and political security in the management of Morocco's "natural resources" would become even more apparent in the struggle over phosphates in the Western Sahara after 1975. See Lino Camprubí, "Resource Geopolitics: Cold War Technologies, Global Fertilizers, and the Fate of Western Sahara," *Technology and Culture* 56, no. 3 (September 2015): 676–703.

techniques went hand in hand with discussions of urban slums as sites, forms, and even antidotes for environmental pollution. As part of the postcolonial project of *al-muḥāfaẓa ʿalā al-bīʾa,* urban experts—whether European technical assistants or Moroccan planners—took on the role of arbiters between risk and resource, precarity and profit. Within official planning circles, the presumed tension between conservation and development played out in debates about the nature of pollution and the status of slums at National Environmental Colloquia and in institutions like the CERF. Questions about the materiality of the built world—the presence or absence of industrial pollution, the precise qualities and properties of local construction materials—remained central to the work of architects, urbanists, and other experts. The project of environmental protection became, like earlier colonial hygienic and urban interventions, essentially a matter of how and by whom matter could be managed.

The legacies of postcolonial environmental framings of Morocco's urban problems continue to reverberate in the present. At a time when the country's administration has positioned itself as a regional leader of renewable energy and sustainable development, tensions remain over whose knowledge and whose vulnerability take center stage. Recent megaprojects like the Noor Power Station near Ouarzazate—the largest concentrated solar power plant in the world—reflect a centralized, expert-driven vision of sustainability. This vision has depended upon the displacement of local residents and occluded struggles over water rights and infrastructural access in the region.[761] In 2004, Morocco's adoption of the World Bank supported "Cities without Slums" initiative shortly after the 2003 Casablanca bombings, represented yet another instance of slum clearance being deployed to manage urban unrest. The program's vast rehousing campaign has affected every major Moroccan city. "Cities without Slums" has built upon various

[761] Hamza Hamouchene, "The Ouarzazate Solar Plant in Morocco: Triumphal 'Green' Capitalism and the Privatization of Nature," accessed May 7, 2019, http://www.cadtm.org/The-Ouarzazate-solar-plant-in.

Protectorate-era crisis technologies—from cinder blocks to low-income loan packages—while also laying claim to the mantle of sustainability. Moreover, the program has relied heavily on public-private housing companies like Al Omrane that characterize their efforts as a sustainable, "holistic" approach to slum resettlement and also boast initiatives for the rehabilitation of traditional architecture.[762] Whether criticized for authoritarian greenwashing or fêted as a leader of sustainable development, Morocco's current administration has incorporated arguments about environmental protection into nearly every facet of urban governance. This continuing affinity between environmental management, the appropriation of "local" knowledge, and the regulation of urban precarity relies in part on the practical and discursive work of urban experts during the 1960s and 1970s, who carved out a role for themselves by promising to resolve the tensions between risk and resource, value and vulnerability. This role, as well as the technologies and arguments upon which it depends, is among the most deeply rooted legacies of colonial and postcolonial approaches to Morocco's urban crisis.

[762] Al Omrane Group, "Al Omrane: Leading Actor for Settlements Upgrading" (UN Habitat, July 2010), http://mirror.unhabitat.org/downloads/docs/Al_OmraneGroup_Morocco.pdf.

CONCLUSION

In the late 1960s and early 1970s, planners and architects articulated a bold vision for Morocco's urban future: culturally and environmentally appropriate housing technologies imported from rural communities to urban slums and adapted by experts to conditions of crisis. *Le Maroc inutile* could reinvigorate *le Maroc utile*. The failure of this vision to materialize during the 1970s set the stage for the continued investment in low-cost, concrete construction and debt-driven forms of housing finance. Throughout the period sometimes referred to as "state developmentalism" in Morocco, the monarchy's redistributive policies remained limited, especially compared to states like Algeria or Egypt.[763] By the late 1970s, even the modest trappings of Morocco's welfare state were under siege, culminating in the adoption of IMF austerity measures in 1981.[764]

In response to these measures, the country's leading labor unions organized a general strike that morphed into a series of riots on Casablanca's urban periphery. As in 1952, participants in the uprising were largely young inhabitants of the city's *qaryan.* Officials answered with spectacular violence—deploying the army to put down the revolt and arresting around 8,000 protestors.[765] Mass graves in the *bidonvilles* held unknown numbers killed by security forces, as the full weight of the informational infrastructures created under the

[763] Bogaert, *Globalized Authoritarianism,* 70.
[764] Bogaert, *Globalized Authoritarianism,* 71.
[765] Jean-François Clément, "Les révoltes urbaines," in *Le Maroc actuel: Une modernisation au miroir de la tradition?*, ed. Jean-Claude Santucci (Paris: Éditions du Centre national de la recherche scientifique, 1992), 393–406.

Protectorate was brought to bear on Casablanca.[766] In the aftermath of the uprising, the language of crisis was omnipresent in analyses of the violence.[767] Continued unrest during the 1980s in Casablanca, Marrakesh, and the North, sparked renewed efforts on the part of state planners to seek technological solutions to crisis that would run alongside the more overt forms of repression that characterized the years of lead. Hassan II brought the French architect, Michel Pinseau, to Casablanca in 1981 to design a new security-centered urban plan for the city.[768] Pinseau's plan—like Écochard's interventions during the colonial period—aimed to signal a point of rupture with preexisting urbanism.[769] As in the late 1940s and early 1950s, rehousing slum residents became a major focus of urban policy during this period of unrest.[770] While state officials in the 1980s certainly reshuffled their priorities —changing the permitting process, placing urbanism under the Ministry of Interior, creating local urban agencies to oversee implementation—the arsenal of techniques available to planners remained remarkably consistent with earlier periods. Not only did urban policies in the 1980s continue to apply principles elaborated in the early 1970s, as Abderrahmane Rachik has argued, but they also relied on the crisis technologies developed in the final years of the Protectorate—specifically on low-cost construction technologies like cinder blocks and public-private, debt-driven finance strategies.[771]

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[766] Susan Slyomovics, *The Performance of Human Rights in Morocco.* (Philadelphia: University of Pennsylvania Press, 2005), 404-405; For comparative accounts of imperial informational infrastructures and their legacies see Thomas Martin, *Empires of Intelligence: Security Services and Colonial Disorder after 1914.* (Berkeley: University of California Press, 2008); Christopher Alan Bayly, *Empire and Information: Intelligence Gathering and Social Communication in India, 1780-1870* (Cambridge: Cambridge University Press, 1996).

[767] This was certainly the case in scholarly responses to the new social movements emerging in the Maghrib during the era of structural adjustment. See, for instance, the many references to "urban crisis" among contributors to Kenneth L, Brown et al., eds., *État, ville et mouvements sociaux au Maghreb et au Moyen-Orient: Actes du colloque C.N.R.S.-E.S.R.C. Paris, 23-27 mai 1986* (Paris: L'Harmattan, 1989).

[768] Pinseau was one of the King's most trusted urban experts and would go on to design the Hassan II Mosque in Casablanca.

[769] Pascale Philifert, "Urban Planning in Morocco: Historical Legacy, Approaches to Urban Policies, and Changes in Urban Planners' Roles and Practices, 1960–2010," in *Urban Planning in North Africa*, ed. Carlos Nunes Silva (New York: Routledge, 2016), 61-62.

[770] Philifert, 62.

[771] Abderrahmane Rachik, *Casablanca l'urbanisme de l'urgence* (Casablanca: Imprimerie El Jadida, 2002), 99; The

The 1990s witnessed two parallel processes of "liberalization": the loosening of the state's repressive security apparatus in the final years of Hassan II's reign and a wave of privatization efforts that aimed to attract global capital to the kingdom.[772] While the former process was partially curtailed by the 2003 Casablanca bombings, the later has proceed unchecked. Today the Cities without Slums Program has redeployed notions of urban crisis—along with its accompanying networks of experts, technologies, and institutions—to address the same essential configuration of problems: the growth of slums, popular unrest, and the imperative to render low-cost housing profitable. Concerns over sustainability and architectural preservation have also been included in the program's aims. New technologies have been added to the equation as well, such as the use of OBIA (object based image analysis) and VHR (very high resolution) satellite imagery to track the expansion of slums from outer space and target neighborhoods for demolition.[773] Neoliberal policies in Morocco have given birth to new forms of state space and future accumulative hubs like the Casa-Anfa business district. Resistance to rehousing and protests over the disproportionate investment of public resources in the coastal regions connecting Casablanca and Rabat at the expense of the rest of the country remain central

attention given to overt forms of coercion during the 1980s obscures the ways in which technical artifacts like cinderblocks and debt-driven housing finance constituted subtler forms of surveillance and control, strategies that worked in part by continuing to separate technical or economic concerns from obviously political ones.

[772] Bogaert, *Globalized Authoritarianism,* 74-76. Miller, *A History of Modern Morocco*, 204-207. From 1980s to the present the core target of the security apparatus gradually shifted from leftist dissidents to Islamists. Susan Slyomovics, *The Performance of Human Rights,* 165-187.

[773] For examples see Hassan Rhinane et al., "Detecting Slums from SPOT Data in Casablanca Morocco Using an Object Based Approach," *Journal of Geographic Information System* 3, no. 3 (2011): 217–24; Dejrriri Khelifa and Malki Mimoun, "Object-Based Image Analysis and Data Mining for Building Ontology of Informal Urban Settlements," in *Image and Signal Processing for Remote Sensing XVIII*, 8537 (Image and Signal Processing for Remote Sensing XVIII, International Society for Optics and Photonics, 2012); Rachid Dahmani, Abderrahman Fora, and A. Sbihi, "Monitoring the Proliferation of Slums through GIS and Satellite Image Processing in the Rural Common of Sidi Taibi," *International Journal of Engineering Research and Development* 10 (August 2014): 8-17; Ministère de l'habitat, "Le programme villes sans bidonvilles système suivi par imagérie satellitaire," http://www.unoosa.org/documents/pdf/psa/activities/2007/morocco/presentations/4-5.pdf; Rachid Dahmani, Abderrahman Fora, and A. Sbihi, "Extracting Slums from High-Resolution Satellite Images," *International Journal of Engineering Research and Development* 10 (September 2014): 1–10.

nodes of political struggle in the kingdom.

In light of this contemporary situation, what is at stake in insisting that construction technologies—the financial, organizational, and material of means building, demolishing, and maintaining the urban environment—are both *Moroccan* and *colonial*? Why does the concept of crisis continue to constitute such a compelling rubric for urban experts and others who aim to remake Moroccan cities today? How have colonial and postcolonial modernization projects remained such meaningful markers for imagining possible futures in spite of their failures? How can a more precise attention to the different notions of materiality at play in these modernization projects offer a partial answer to these questions—a way of thinking through oppositions in the history of technology and the history of colonialism between agency and constraint, success and failure, creativity and appropriation, continuity and rupture?

Making Matter Moroccan

This final question returns to the problematic concept of materiality itself, a category characterized by contemporary scholars alternatively as a form of affordance—how material properties enable or inhibit certain forms of use and meaning making—or as a type of excess—how matter constantly overruns its apparent boundaries, introducing new uncertainties and complexities into technopolitical arrangements. This project has drawn together moments from Morocco's twentieth-century urban history in which these and other variegated notions of materiality became meaningful for the actors involved. When colonial and postcolonial experts, Moroccan laborers, urban insurgents, and residents treated matter as vibrant or inert, politically meaningful or purely technical, open or closed to interpretation, homogenous or heterogenous, etc., they tacitly engaged with variegated concepts of materiality. Juxtaposing excess and

affordance demonstrates how both could operate simultaneously in the projects and projections of actors involved in construction work. For example, post-quake engineers in Agadir treated seismic risk as something that could be contained through concrete constructions techniques that enabled stability, security, and hygiene. When it came to local building practices, however, they cast these as an unruly collection of excessive forms—an unmanageable materiality that had to be banned outright. In contrast, the European technical assistants and Moroccan officials of the CERF, framed the very same local building practices in terms of their affordances—their superior thermal insulation and embeddedness within rural economies and societies.

Multiple conceptions of materiality were always at work in the construction of colonial and postcolonial housing projects. By strategically shifting between these different concepts, engineers, architects, and officials—who invoked their mastery of matter as their primary claim to expertise navigated the continuities and ruptures of decolonization as well as the failures and successes of modernization. This dissertation has admittedly offered more examples of this strategic shifting among expert communities than for workers or residents. I maintain, however, that laborers and inhabitants' tacit engagement with materials also constituted a kind of technopolitics. When Casablanca's protestors weaponized cinder blocks or Agadir survivors refused to reside in concrete emergency housing, they brought their own understandings of materiality, as both affordance and excess, to bear on expert-led construction efforts.

Attending to practices of strategic shifting between different notions of materiality also helps to clarify what it means to describe construction technologies as both *Moroccan* and *colonial.* These two terms are not opposed or mutually exclusive categories but are better thought of as distinct but occasionally overlapping qualities that groups of actors attributed to matter. For urban experts in the 1950s, building technologies were often colonial in terms of their

affordances, and Moroccan in terms of their excesses. Cinder blocks enabled the remaking of Casablanca's slums—the rapid, cheap reconstruction of the Carrières centrales—in ways that opened the neighborhood up to enhanced colonial surveillance. At the same time, local environmental factors—from the salt content of the water mixed with cement to the humidity that complicated the pouring and setting of concrete in standardized molds—introduced qualities into the finished product that threatened to disrupt the very affordances that led colonial experts to invest in these methods in the first place. The labor of Moroccan masons who produced cinder blocks and of residents who used them to wall in the terraces of modernist housing projects constituted forms of excess from the perspective of colonial officials. For inhabitants, however, cinder blocks offered ways of opening up the floor plans of their apartments to reinterpretation. At other moments, urban experts considered the Moroccan qualities of certain construction technologies as affordances, such as CIFM housing cooperatives that enrolled "builders in the soul" to take out small personal loans for the construction of low-cost housing.

Ultimately, the suggestion that the particularities of local environments, labor forces, and political struggles made construction technologies Moroccan is an observation that could apply to many other contexts.[774] The more novel claim is that *Moroccanness* came to be defined at key moments in terms of materiality—as alternatively an excessive quality or an affordance. In colonial housing projects, simplistic visions of Moroccan culture found expression in architectural features such as the terrace or the courtyard, enabling forms of gendered seclusion that officials and local notables considered necessary. The same underlying assumptions about the visibility and vulnerability of Moroccan women's bodies led the same elites and officials to

[774] It would be possible, for example, to investigate how concrete construction technologies in France were made French during the later part of nineteenth century as they became interwoven with the social issues and political struggles of the day.

cast stairways in modernist apartment buildings—spaces of potential mix-gendered contact—as a site of threatening excess. In each case, matter was made Moroccan and Moroccanness made material through this interplay of excess and affordance.

Continuations of Colonial Crisis

This dissertation has argued that colonial conceptions of crisis were *materialized* through construction technologies. These crisis technologies arranged Moroccan natures and Moroccan forms of skill, labor, and social organization in ways that enabled them to be brought into colonial modernization schemes without necessarily stripping them of what made them threatening to colonial experts. The notions of crisis that took center stage during the 1920s and 1930s were first and foremost about defining relations between different actors within colonial society— experts, artisans, workers, officials, and residents—while also reallocating the technological labor of construction between these different categories (Chapter 1). During the first decades of the Protectorate, many colonial engineers lauded concrete construction not only for its presumed efficiency or the stability it enabled, but because of the status it afforded their professional community. Engineers and officials positioned concrete construction as the inevitable solution to crisis in cities like Casablanca—arguing that better building technologies could address hygienic concerns, labor shortages, housing deficiencies, and other problems grouped under the rubric of "crisis" while also providing a model for harmonious relations between workers and experts in colonial society. Yet the technologies they trumpeted never operated in a smooth or straightforward fashion. Concrete was from the very start inscribed with the contradictory projects of multiple sets of actors—the supposedly unruly labor of Moroccan workers, whether at the cement plant or on the construction site, and the unpredictable

characteristics of local environments.

During and after WWII, references to urban crisis—while they remained embedded with assumptions about expertise and labor from the 1920s and 1930s—extended to a new matter of concern: how to simultaneously navigate frictions within colonial society and scarcity within the colonial economy (Chapter 2). Cement grants to political allies, practices of infrastructural delay, demolition campaigns requiring residents to dismantle structures themselves, and new low-cost housing for Moroccans all constituted strategies designed to address this particular framing of crisis. At the same time, however, the intensification of anti-colonial violence and the gradual move toward decolonization led officials and experts to push for a new set of crisis technologies. In the last years of the Protectorate, experts and officials presented prefabrication, public-private housing finance, and construction cooperatives—technologies tied to new policies of "flexible planning"—as strategies for reorganizing relations between the state, private capital, Muslim elites, and the urban poor (Chapter 3).

These technologies spanned the process of decolonization only to be put to different ends during Agadir's reconstruction after the 1960 earthquake (Chapter 4). As seismologists and geologists formulated a notion of seismic risk to describe of how damage and danger were distributed in the pre- and post-quake city, engineers and planners harnessed this concept to remake construction practices and the urban property market. Cinder blocks, housing cooperatives, and small, low-interest loans to survivors—techniques used during Casablanca's housing crisis in the 1940s and 1950s became an integral part of the post-quake reconstruction effort. As a kind of postcolonial "crisis," the earthquake prompted officials to take extreme measures to ensure the city's rebuilding as means of reinforcing Moroccan sovereignty in the South. Reconstruction also provided an opportunity for European technical assistants to define

their role and demonstrate their usefulness within the postcolonial polity. During the late 1960s and early 1970s, these debates about postcolonial expertise and the place of local knowledge played out in reference to a loosely connected set of issues: the decline of "traditional" architecture, the place of slums within models of urban development, and new designation of "environmental" problems such as pollution (Chapter 5). These debates drew upon earlier conceptions of Morocco's urban crisis to define particular building practices as risky or reliable—valuable or threatening—in the context of intensifying state surveillance and an increasing reliance on overt violence to deal with dissent in the run up to the years of lead.

Since the founding of Protectorate then, references to crisis have included a shifting array of urban problems and a wide variety of proposed technical solutions. Each new formulation of crisis left behind layers, both literal material sediment (concrete structures) and practical accretions of technological labor. These accretions are observable by following materials themselves— considering, for instance, how an organizational technology like housing cooperatives depended upon cinder blocks made from cement distributed through municipal institutions and manufactured through industrial processes that relied on economies of resource extraction. Each phase of this process was characterized by political conflicts and contingent, creative technological choices. These conflicts and choices also had long-term consequences. For instance, the rise of concrete as the modern construction material *par excellence* in colonial Casablanca during the 1920s and 1930s when other possible alternatives still existed—steel-frame architecture or the modernization of local construction techniques—allowed French engineers to engage in a kind of "double-boundary work" against architects and Moroccan skilled workers.[775] Whatever affordances concrete provided to Morocco's community of

[775] Gieryn, *Cultural Boundaries of Science,* 40.

professional engineers, it also engendered forms of excess as a substance that in practice could be moved, mixed, and manipulated by essentially anyone. Yet the very possibility for excess, for unregulated concrete construction, is part of what gave weight and urgency, a sense of crisis, to engineers' claims to authority over the trajectory of colonial modernization projects.

In the present, intermittent slum removal followed by low-cost housing construction through public-private partnerships is a basic feature of urban life in Morocco. Critics of these programs might call for less violent displacements or greater equity and transparency in the allocation of housing resources. It is rare, if not impossible, to question who has the authority to decide which forms of building and dwelling belong in the postcolonial city. This is not simply an ideological or conceptual impossibility. It is the result of a history of compromises and conflicts that have produced an urban environment in cities such as Casablanca where only certain technologies and forms of expertise appear safe, hygienic, or secure. This urban environment is a direct legacy of colonial approaches to managing urban crisis.

Modernist Failures and Decolonization

How safe, hygienic, and secure is Casablanca's urban environment today? When the Ministry of Housing commissioned a study in 2012 after a series of catastrophic apartment collapses in the city, the LPEE identified some 6,338 at risk structures.[776] The distribution of danger is not even across urban space but is often remarkably consistent across time. In the 2012 study, Derb Ghallef, not far from the site of a late-1930s demolition campaign, and Derb Moulay Cherif, part of the former Carrières centrales, were two of the sites with large concentrations of

[776] A.T., "Effondrement à Casablanca : 3 victimes, à qui la faute?," *Medias24*, November 8, 2018, https://www.medias24.com/MAROC/SOCIETE/187413-Effondrement-a-Casablanca-3-victimes-a-qui-la-faute.html.

substandard housing.

These spatial continuities are one of the reasons I refer throughout this dissertation to the making of a colonial "urban environment" that to a large extent persists in the present. This environment is the product not only of ecological factors, but also of technologies, built forms, and sustained institutional and communal practices—as well as interactions between each of these categories. Some of the buildings in Derb Moulay Cherif are part of former corporate worker housing projects. Many of their walls have begun to wear down. The paint has chipped, and their foundations are no longer secure as additional floors have been added to the initially one-story structures. In the 1950s, this was a Moroccan neighborhood, logistically separated from the European city center with perhaps a few European workers living in close proximity. The not quite totalizing divisions that gave the Carrières centrales a distinct place within colonial Casablanca's racialized landscape continue to resonate in Derb Moulay Cherif today. The neighborhood's weathered façades and rectilinear streets still speak to the mixture of neglect and anxiety with which Protectorate officials treated its residents. The colonial urban environment is still a lively presence here, nestled within the postcolonial city.[777]

Describing the afterlives of the colonial urban environment also means reckoning with the legacies of modernist failures. This dissertation has contended that colonial modernization schemes were in a certain sense designed—both intentionally and unintentionally—to fail. Crisis technologies might have achieved particular political ends, such as cementing the authority of urban experts in the contested domain of colonial construction, but they did not offer permanent solutions to any of the problems grouped under the label of "crisis." Undoubtedly some of these failures were epistemological, such as colonial planners' inability to predict and prepare for the

[777] These reflections are largely based on the time I spent in and around Derb Moulay Cherif where I conducted most of the oral histories for this project.

spectacular demographic growth of Moroccan cities. At the same time, however, irresolution, delay, and deferral were baked into the very designs of colonial modernization projects. During the postwar period, even the largest, most ambitious low-income housing developments for Moroccans aimed only to stave off hygienic collapse and temporarily appease restive residents. Michel Écochard's program for the Carrières centrales offered "housing for the greatest possible number"—a formulation that implicitly acknowledge that housing could never be provided for *all.* The seemingly more robust postcolonial promise of universal home ownership rested on introducing new forms of personal debt to Morocco's urban working classes and further linking their fate to state and public-private creditors. Even Lyautey's original associationist model for the Protectorate—with policies designed to preserve Moroccan social and cultural forms while modernizing particular spaces and domains—ultimately showed that modern construction, the building of housing, ports, roads, and bridges, was thoroughly reliant on harnessing Moroccan forms of skill and labor. On the one hand, attempts to prop up craft guilds and defend a distinct professional domain for *muʿallimūn* proved piecemeal; on the other, Moroccan skilled and unskilled workers became essential for carrying out concrete construction and began by the 1930s to exercise their collective strength through labor organization.

This dissertation has suggested that had urban experts been able to deliver on promises of a hygienic, well-ordered, and harmonious colonial city—had they been able, in other words, to fully resolve any iteration of the country's urban "crisis"—they would have confronted obligations that they were unprepared to meet. Had they provided stable, permanent housing for all, or even most, Moroccan residents, extended water and electrical infrastructures to their neighborhoods, created possibilities for stable employment, and somehow reformed the colonial system in ways that diminished unrest, they would have undermined the very foundations of the

Protectorate. Instead, the colonial history of managing crisis through construction technologies left behind light, cheap structures that were designed to be easily demolished, strategies for shifting the cost of housing construction directly onto the urban poor, and sociotechnical hierarchies between experts and workers that remain nearly impossible to question. The continuation of the colonial project in Morocco depended upon the partial failures of modernization, upon its excesses.

Concrete itself has remained an ambivalent signifier for Moroccan modernization—its promises and its failures. In Abdelilah Laslami's words "to be modern is to build with modern materials."[778] Today, however, concrete is under fire from environmental activists concerned with the immense quantities of carbon released globally through cement production and the building industry. New advocates of sustainable architecture are once again turning to the Draa Valley, in search of local knowledge, to find alternative materials to concrete.[779] But, who can lay claim to these materials—not only to the capacity to master and manipulate their properties, but to define their qualities, associations, and desirability? The colonial legacy at issue here is not simply a matter of restricting Moroccans' capacity to work with "technology." At key moments, such as the cooperative movement of the 1950s or the CERF studies of the 1960s and 1970s, the technological abilities of Moroccans were presented as a resource to be tapped, harnessed, and exploited. The central question—since the first concrete constructions in colonial Casablanca—was who possessed the authority to define how technological labor would be distributed in the making of urban futures.

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[778] Interview, Abdelilah Laslami, August 14, 2017.

[779] For only a few examples see Eliana Baglioni, "Sustainable Vernacular Architecture: The Case Of The Drâa Valley Ksur (Morocco)" (Second International Conference on Sustainable Architecture and Urban Development, Amman, Jordan, 2010); Salma Slaoui et al., "Sustainable Architecture and Energy Efficiency a University Campus Project in Fez City, Morocco," in *Proceedings of 3rd International Sustainable Buildings Symposium (ISBS 2017)*, ed. Seyhan Fırat, John Kinuthia, and Abid Abu-Tair, Lecture Notes in Civil Engineering (Cham: Springer International Publishing, 2018), 65–79.

And what of the futures that have already passed, the modernist visions of an urban good life once made accessible only to Europeans? What has become of these visions as the materialities that supported them have fallen apart? The modernist poet, Mostafa Nissabouri, describes one collapse in the center of 1970s Casablanca, "a metallic structure in the middle of a pool, atop a vertical row of nickel tubing….One day the entire edifice disintegrated into a heap of twisted pipes and crumbling masonry, the delayed guarantees of the contractor having finally come due. Since then the urban landscape has ceaselessly undergone every sort of dis-figuration."[780] Considering colonial architecture, Nissabouri ponders "its interpretive inclusions as a palliative measure for encountering the Other, its reminiscences in ornamentation that ceremonially perform the feeling of conquest. The city's memory, as we gradually travel back through the course of time, spreads out in a conversation of rebellious and chaotic fragments; every stop reveals a multitude of unstable landscapes, streets and other sites of anecdotal mooring that—instead of consolidating the chain of events—only deepen the excesses of a downward spiral."[781] A fractured urban landscape within which the collapse of structures is not metonymic, for there is no whole to represent. Nissabouri questions the notion of postcolonial failure by disrupting the presumed unity of the colonial city itself. Narrative fragments and material fragments resist recomposition into a singular story of progress or decline. Through Nissabouri's example, the challenge of envisioning an urban future beyond crisis comes into focus. It is the impossibility of imagining a future not grounded in a return to colonial visions of the good life that were themselves palliative, fractured, and unstable, not to mention exclusionary.

[780] Mostafa Nissabouri, "Casablanca, fragments d'une mémoire dispersée," in *Casablanca: Fragments d'imaginaire* (Casablanca: Éditions le Fennec, 1997), 53-54.
[781] Nissabouri, 55.

Decolonizing the technologies and environments left behind by the modernist failures of the French Protectorate does not involve condemning them as colonial or laying claim to them as Moroccan. It is because concrete is both Moroccan and colonial, a product of "rebellious and chaotic fragments," that it has to be reckoned with in the "multitude of unstable landscapes" were it resides. To decolonize the future means imagining forms of power and justice that can be lodged in structures as well as infrastructures, bodies as well as environments—in minute technical forms and in grand political projects. These acts of imagining begin in the often-violent place where invocations of crisis—that seek to define and constrain possibilities for revolt and refusal—fail to reach.

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(CND) Centre national de documentation (Rabat)

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